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AIRLINES

AUGUST 1, 1955

Industry News Digest

AF Accelerates F-101, F-104 Production

An interceptor version of the McDonnell F-101 and a production model of the Lockheed XF-104, designated the F-104A and powered by a 15,000-pound-thrust General Electric J79, are being accelerated to meet the threat of new Russian long-range bombers.

Defense Secretary Charles E. Wilson has given the USAF permission to speed output of the two planes. Gen.

Nathan F. Twining, AF Chief of Staff, had recommended such a step to Air Secretary Harold E. Talbott in June.

Funds to boost output of the two supersonic planes will come from past appropriations. USAF made no request for additional money to cover the Voodoo and the Lockheed day superiority fighter during hearings on the defense budget.

Fairchild Discloses Jet Transport Plans

Role of Fairchild Engine & Airplane Corp. in future jet transport picture has been partially clarified with announced plans for a light, seven-passenger jet for business aircraft use.

New Fairchild jet is designated the M-225. It has a gross weight of 17,695 pounds, range of 1,280 nautical miles and cruises at 560 mph. Power plants will be four Fairchild J44s or comparable thrust engines.

In announcing the M-225, W. L. Landers, manager of Fairchild's aircraft division, said engineering plans have been studied by industrial fleet operators and military services. "There is recognized need for a light jet transport of this category," he added, "and those who have seen these designs have expressed considerable interest and enthusiasm for the project."

M-225, Fairchild says, combines the high speed performance of fighter type

aircraft with safety features of transports. It estimates the aircraft will take off at full gross within 5,720 feet over a 50-foot obstacle and land in 1,222 feet.

Lockheed Rolls Out Air Force C-121C

First of a large fleet of USAF C-121C Super Constellations has rolled off the assembly line at Lockheed's California Division and entered flight test.

C-121C order, Lockheed says, represents the largest single purchase of Super Constellations. Exact numbers were not disclosed.

AF deliveries are slated to start this summer, with first units entering Military Air Transport Service transatlantic operation. Military interior in the Super Connie calls for three options: 75 passengers; 47 litter patients, or 14 tons of cargo.

C-121C is similar to the civil Model 1049G except for interior. It will fly nonstop more than 4,400 miles and at maximum cruise power flies at 335 mph.

Soucek, Ex-BuAer Chief Dies

RAdm. Apollo Soucek, 58, chief of Navy's Bureau of Aeronautics from June 1953-1955, died in Washington, D. C., on July 22. Soucek had been inactive in BuAer since January, following a stroke suffered late last year. He was succeeded as BuAer chief by RAdm. James S. Russell.

XT53 To Power Bell XH-40 'Copter

New XT53 free turbine engine rated at 825 equivalent shaft horsepower and developed by Lycoming Division, Avco Manufacturing Corp., will power Bell Aircraft Corp.'s XH-40 Army utility helicopter.

First photos of the XH-40 were released last month (AMERICAN AVIATION, July 18), but at that time engine details were withheld. XH-40 is slated for front-line evacuation service and will carry an 800-pound load at speeds exceeding 115 mph.

Republic Doubles 1st Half Income

Republic Aviation reports first half net income of \$9,612,399 on sales of \$300,594,755 compared with a six-month net of \$4,597,838 on \$166,949,944 last year.

Backlog was placed at \$700 million, down \$200 million from that of June 30, 1954. President Mundy I. Peale told stockholders that plane deliveries are back on a normal scheduled basis, and that planes previously "piled up" at Farmingdale have been turned over to the Air Force.



NEWEST, LONG RANGE VERSION of North American Aviation's Super Sabre, the F-100C, has been assigned to Tactical Air Command's 450th Fighter Day Wing at Foster Air Base, Texas. It is capable of carrying atomic bombs at supersonic speeds.

Lockheed Commercial C-130 in Works

MARIETTA, GA.—With production of the C-130 Hercules well in hand, Lockheed Aircraft Corp.'s Georgia Division is putting finishing touches to its program for a commercial version of the military turboprop transport. Talks will soon start with the Civil Aeronautics Administration on certification of the aircraft.

Indications are that no serious problems are likely to be raised in clearing the C-130 for commercial cargo-carrying operation. The one factor that should facilitate the certification program is that the Allison 501 engine, commercial counterpart of the C-130's T56 powerplant, has already received CAA certification for commercial operation.

Meanwhile, increasing numbers of airline executives and engineers are visiting Lockheed's Georgia Division to discuss various aspects of the C-130. Much of this interest undoubtedly stems from the fact that it is the only American turboprop transport to enter production.

• Nonetheless, there is genuine eagerness to get information on when the commercial C-130 will be available, what it will do and how much it will cost. Lockheed, incidentally, points out

to carriers interested in the commercial C-130 that such an aircraft would be a natural teammate with the Electra since both will have the same powerplant.

Indicative of the heightening airline interest in the C-130 was a visit to Marietta, July 21 by a group of Air Transport Association officials headed by president Harold Pearson, vp-operations Milton W. Arnold, and engineering director Allen W. Dallas. Seven ATA member carriers were represented by engineering and operations officials: American, Continental, Delta-C & S, National, Southern, Trans-Texas, and TWA. Lockheed-Marietta had previously received visits from representatives of certain of these carriers and several others.

Lockheed naturally is glad to see the rising interest in the C-130, but it stresses the point that the aircraft it will offer commercially will be considerably different from the present military model. The availability of this commercial derivative of the C-130 depends on the attitude of the U. S. Air Force, but Lockheed officials are encouraged by the recent green light given to Boeing Airplane Co. for production of a commercial version of the Model 707.

• Lockheed-Marietta is very much dependent on Air Force approval, since its industrial facility is a government-owned plant.

Advanced military models of the aircraft are being studied by the Air Force. In making these studies the Air Force is taking into consideration civil reserve fleet capability for the aircraft.

The commercial C-130, when it materializes (it is definitely "when"—not "if") probably will be at least 10 feet longer than the present aircraft (which itself reportedly is soon to undergo a slight change in external appearance in the nose area). Gross weight probably will be around 160,000 pounds against the C-130's present normal maximum take-off weight of 110,300 pounds.

• Five aircraft have been built to date, and several others are in an advanced stage of completion. Flight time on the C-130, mainly accumulated by the two Burbank-built prototypes, is about 100 hours. By next spring Marietta should have rolled out a couple of dozen of the transports. • • •

Aviation Pioneer Dies

Ernest L. Jones, 72, aviation historian and co-founder of the *Early Birds*, died of cancer July 20. At the time of his death he was secretary of the *Early Birds*. From 1907 to 1915 Col. Jones financed and edited the first U.S. aviation journal, *Aeronautics*. Later he was appointed by the then Commerce Secretary, Herbert Hoover, to organize an aeronautics branch in Commerce which later became the Civil Aeronautics Administration.

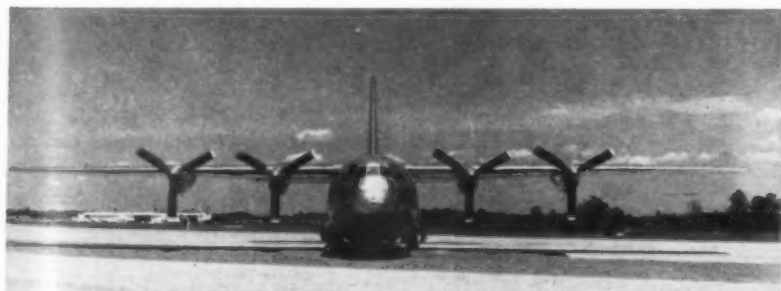
AA Names New VP

Nelson Lee Smith, former member of the Federal Power Commission, has joined American Airlines as v.p.-economics. Before his association with FPC, Smith was chairman of the New Hampshire Public Service Commission and one-time member of the New England Governors Railroad Committee.

TWA Orders RCA Radar

Trans World Airlines has announced a \$400,000 program under which its fleet of 20 Lockheed 1049G Super Constellations will be fitted with C-Band airborne weather radar built by Radio Corp. of America.

Decision to install radar in the 1049Gs followed several months of testing on the first three aircraft of this type in nonstop transcontinental operation, TWA said. Airline plans to begin actual installations as soon as the radar can be delivered by RCA.



C-130 IS THE WORLD'S first production turboprop transport to be fitted with reversible propellers (Curtiss Turboelectric).



C-130 PRODUCTION is moving into high gear at Lockheed-Marietta. About six aircraft have been completed to date.

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AMERICAN AVIATION

L'Affaire Talbott

AS THIS WAS WRITTEN the Senate subcommittee looking into the extracurricular business affairs of Secretary of the Air Force Harold E. Talbott had decided to hold public hearings. But it would seem rather clear that regardless of the outcome of the hearings or the extent and effectiveness of Mr. Talbott's explanations, his usefulness as Secretary of the Air Force is over.

It appeared at the outset of the inquiry that this might be one of the not-infrequent attempts by politicians and segments of the press to smear and discredit top businessmen who have accepted public service positions in the federal government. But subsequent developments including the publication of correspondence carried on in Mr. Talbott's Pentagon office indicate pretty clearly that although Mr. Talbott may have seen nothing improper in his continuing activity as a partner of Paul B. Mulligan Company, a lot of others have. The Democrats have pushed the inquiry stead-

ily, but there has been a noteworthy lack of spontaneous defense by leading Republicans.

One of Mr. Talbott's really tangible achievements since taking office has been his work on behalf of uniformed personnel. The morale level has been much improved, despite a certain *noblesse oblige* atmosphere of the patrician stepping outside of a very rigid social caste to mingle with the humble citizenry for the annual festival below the turreted castle. He has really worked at the job and has racked up more than an average number of accomplishments. Yet we fear that some of the morale gains are being erased by disclosures that the Secretary not only continued to receive upwards of \$60,000 a year from his partnership, but actively worked on *that* job, too.

Whatever the outcome of the hearings, however Mr. Talbott has lost his effectiveness as Secretary of the Air Force. Things can never be the same again.

Our Unseen Air Strength

A FEW SUNDAYS ago we were watching the Pan American Airways' sponsored TV show "Meet the Press." Senator Hubert Humphrey, the glib Democratic Senator from Minnesota, was being interviewed and the topic of the moment was Soviet Russia and the then forthcoming Geneva conference.

Senator Humphrey was going great guns about the Russian position of strength and then out of the blue came the following remark: "... the most gigantic air show the world has ever known took place over Moscow and that's the kind of strength the Soviet is going to be bargaining from." (Italics ours)

There's been a rash of such irresponsible scarehead statements like that lately to the point where the average American citizen must wonder what in the world happened to all the billions we've poured into our own air power.

A few weeks ago Joseph Alsop, the columnist, who is much better on foreign relations than he is on his hysterical pieces about Russian air strength, wrote that "the Soviets are now beginning to lead the United States in quality as well as quantity of aircraft production" and ended his piece with "While the cold war continues, the Soviet capture of the traditional American lead in the air constitutes a national emergency." (Italics ours)

To top it all off Representative Clarence Cannon, Democrat of Missouri, chairman of the powerful House appropriations committee, delivered himself of a speech on the House floor in which he said "Russia today has military superiority over all the combined powers of the entire free world," and added such careless nonsense that "Our military authorities tell us that with a simultaneous attack with weapons which Russia now has at her command they could destroy at the first blow 53 of our major cities, including Washington." (Italics ours)

Such statements must make the Soviets feel mighty good. After reading for so many years about U.S. air and

atomic superiority which we've boasted about to the world with no holds barred, it was hardly any wonder that the Russians bent every effort toward developing its own air and atomic power. It should have been no surprise that they developed enough to put on an air show over Moscow, but it was certainly no demonstration of devastating intercontinental air power *in being* despite the creditable technical advances and copying they've achieved.

It seems a little out of fashion to say something good about U.S. air power and our vast productive facilities and our design skills and our actual strength in being, which are matchless despite the expected efforts of others to do good things in their own rights and capabilities.

We think it's high time that the Pentagon, with White House blessing, show to the American people that we aren't exactly cringing helplessly awaiting a surprise attack from far-away Russia to blast us all to hell and gone. The following idea comes from a top brain in the Air Force and we'd like to pass it along.

Over Labor Day the National Aircraft Show will be held in Philadelphia. Over that same weekend a very substantial population of the United States will be taking the holiday at resorts over the area between Washington on the south and lower New England. Let Gen. Curtis LeMay organize a fly-by of at least 500 B-47's (we've certainly got plenty of them) over this heavily-populated area with the focal point over the National Aircraft Show. By a devious routing the shore areas of New Jersey and Long Island, and the big cities of the east, could easily be covered.

Perhaps it would be a good idea to have the Navy make its contribution, too. Perhaps other Air Force planes beside the B-47's should be used, but at the minimum some 500 B-47's flying not too high and coming in from various directions, would make a deep and abiding impression on millions of Americans who have paid for the air power and would like to have some assurance that we have it in being. They've never seen even a fraction of it. Why not push a big regional air show that means something and will be seen by more than a few thousand people?

Letters

Washroom Suggestions

To the Editor:

As one who previously traveled for many years on the trains and currently travels almost entirely by air I can confirm what Bob Adams says about the Pullman washrooms as compared with the washrooms on present day airliners. It appears to me that a major improvement is long overdue and I offer these suggestions for the benefit of any airline that wishes to make a start.

In the first place, the present washroom facilities are hard to clean up after use because of sharp corners, overhangs and general lack of smooth surface. It really would take work with the proper tools to get some of them clean.

Secondly, there is nothing provided by which one can clean up the washbowl. In the old time Pullman, you always had your linen towel with which the place could be made shipshape. When I came back from Europe on X airlines the other day, the only thing in the washroom was one of these "community towels." Possibly suitable materials for cleaning up a washbowl, preferably something that would be slightly abrasive, which would dissolve the grime and could be thrown away, would be the best solution. Why not a large size version of the small clean-up tissue that is sometimes handed out on the airline?

There is another psychological bar which exists in the size and arrangement of the washroom itself. Where two washbowls are mounted in the same console, it is difficult to get much enthusiasm about cleaning up the bowl which you have just used when water from the adjacent one is splashing over into it. Even a separation of a few inches between washbowls would help.

Another psychological bar is the uncomfortable, tight space in which most of this equipment is mounted. If there is any particular load on the washroom, one's instinct is to vacate it as quickly as possible rather than wait around and do a housekeeping job. This is particularly true if others must squeeze past you to get to the rear basin or the toilet compartment as on the airplane on which I returned recently.

What is said about waste containers is also quite to the point. I don't plead guilty to being particularly stupid but I confess that I cannot always relate the printed instructions in the washroom to the facilities that seem to exist and determine how I am expected to cooperate. Obvious and properly labeled containers such as are suggested would be a help.

What is said about airline stewards is also certainly true. On this flight I was never able to detect any clean-up performance by the stewards on the plane and my wife says the women's compartment was just about as bad. I usually wear soft-soled house slippers on a cross-Atlantic flight and certainly cringe when I have to walk on the wet, sloppy floor of the washroom. Certainly this much of the problem is directly the responsibility of the stewards.

Nor is it the fault of the stewards being overworked. While we did have one steward on this particular flight who

really earned his money from beginning to end, the stewardess and the other steward spent a great deal of time sleeping, reading magazines and chatting with each other. Whether keeping the washroom clean is beneath their dignity or not it does appear to me that some changes should be made in their understanding of their duties.

I agree that this washroom problem is one of the most distasteful in air travel and believe that it is definitely up to the airlines to make it possible, convenient and psychologically inviting for the traveler to help keep the facilities in good shape. To the extent that they (the public) do not, it is in my opinion the airlines' responsibility to see that the stewards or stewardesses do what is necessary. It is also true that one sometimes gets on an airliner leaving a terminal where the washroom is not in good condition when the trip starts. Possibly what is needed is a complete new approach to washroom design instead of treating the matter as an after-thought.

(Name withheld by request)

To the Editor:

I certainly approve your airline washroom comments and I think it is time something should be done about it.

Now, if you will move in on the moron who boards the plane at mid-day, pushes his seat back on top of your book or typewriter, then props himself upright with a pillow, leaving you completely locked in an intolerable position, I would be very grateful. I also commend Western Airlines for having their stewardesses add to the seat-belt routine on landing the following helpful requests: "For the convenience of the passenger behind you, please place your seat in an upright position."

R. W. Hemphill
President
HEMPHILL TRAVEL
SERVICE, INC.

Los Angeles

Backs Bentley—

To the Editor:

I have followed closely the pros and cons of your argument on your 1950 Bentley versus any other car made today. Without expressing any undue favoritism I have tried to steer away from agreeing with you because I felt that 99 percent of your American readers would not know a Bentley if they saw one. If they did, their typical remark would probably be, "Gee, look at that funny foreign car!"

When I picked up your July 4th issue of AMERICAN AVIATION and saw Mr. Roger Fleming's letter in your column I could contain myself no longer to do the unprecedented by writing to the Editor—unprecedented because I happen to be in the same field as you, with one of America's largest engineering magazines.

I presume that Mr. Roger Fleming, in his capacity as a public relations man for General Motors' Allison Division, is an unbiased, intelligent person, although his letter to you certainly points to the contrary. May I please, Mr. Parrish, take a moment to stress my argument? How can Mr. Fleming pass any opinion without first-hand knowledge? He makes his offer to you to put a Cadillac at your disposal for two weeks.

I would like to counter with an offer to put a Rolls-Royce-made car at his disposal, should he ever visit my native England, and let him compare, if a comparison were possible. The only comparison I would make between the two cars is that one is a good, solid mass-produced car, engineered for American highways only; and in England or on Continental roads it is so out-of-place that the situation could relatively be compared to the Queen Mary operating as a paddle steamer on the Mississippi.

The other car is a truly first-class piece of classical design, engineered for those who can afford to pay the price and is equally at home on narrow, hilly English roads as well as on the broad ribbons of concrete in the United States.

Summing up my comparison . . . the Bentley by Rolls-Royce has the quality of workmanship found in only very few surviving cars, whereas the Cadillac has workmanship compared only to American mass-production methods. I don't want to decry America's top car, because for what it is, it's fine but let's not compare it to the Bentley.

So much, then for Mr. Fleming's automotive argument, but I feel I must clarify his mistaken views of English aircraft engines. Just how familiar is Mr. Fleming with the English engines? The arguments he makes in his letter classify him as a layman in the field. Let him not decry design of British aircraft engines . . . they are the best in the world, including those of the USSR.

No, it is not the design that is at fault but rather the limited quantity of production, and even then it is only lack of funds rather than know-how that limits production. Let's consider the Rolls-Royce "Conway," the Bristol "Olympus," Armstrong-Siddeley's "Saphire," Bristol's "Proteus" and a host of others, the details of which cannot today be told because of security attachment.

You, I am sure, having traveled widely and seen much in the aircraft field, will agree that Mr. Fleming's automotive and aircraft arguments are weak and resemble the well-known commodity, Gruyere cheese—full of holes.

I enjoy reading your column very much; and your world-wide travels and your commentary on the aircraft world not only keep me up-to-date, but support my theories about the vast room left for improvement in the airline field. Keep up the good work.

PETER J. B. STEVENS
Detroit, Michigan

Liked Transport Issue

To the Editor:

During the past two months, we have had occasion to read, study, digest and to use frequently your Annual Air Transport Progress Issue of April 25. It is the best you have ever produced—highly readable, richly informative, and tremendously valuable to everyone in aviation.

I would like to add my commendation for this outstanding editorial contribution. This one undertaking alone deserves an "Oscar" or "Pulitzer Prize" in business journalism.

Eugene Phillips
Manager, News Bureau
Delta-C&S Air Lines

Atlanta, Ga.

AMERICAN AVIATION

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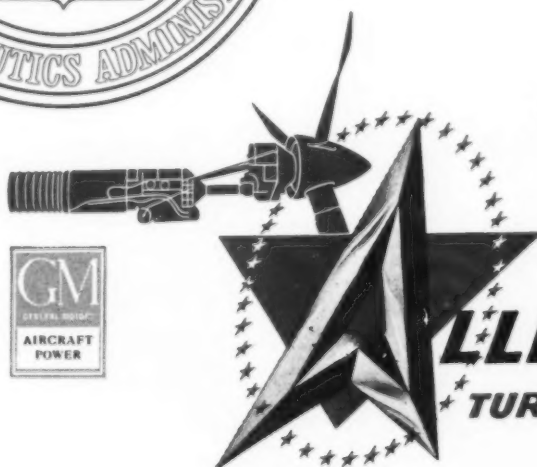


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Production Spotlight

• General Motors' Kansas City plant has now delivered its last Republic-licensed F-84F Thunderstreak and the windup of remaining USAF work is expected within 90-120 days. AF still is trying to find a use for the production facility.

• Output of the General Electric J47 is now concentrated in the company's Evendale, Ohio, plant now that Packard's pilot production line was shut down at the end of June. Studebaker and Packard both helped GE top the 35,000-mark in production of the B-47 and F-86 engine. Studebaker stopped delivering J47s last year but Packard was kept in as a minor producer until fiscal 1956 began.

• Prospects of a merger between Bell and Lockheed Aircraft Corps. are all but completely dead.

• There have been some preliminary discussions about Buick Motor Division possibly building the Canadian Orenda 13 or 21 turbojet in the U. S. Nothing is likely to be decided soon because the high-thrust engine is two years away.

• Number of engineering changes on the Pratt & Whitney J57 is currently averaging between 75 and 100 each week.

• Germany's first postwar production aircraft, the Heini Dittmar 153 lightplane, will be available late this summer. Production is at a plant in Rothenburg on Tauber and the distributor is Carlsen-Aero in the same town. Price tag of the Continental-powered plane will be about \$3,500.

• Rolls-Royce probably will show the Conway by-pass jet engine but not the RB 109 turboprop at this year's Farnborough display.

• The Bristol Orpheus-powered Folland Gnat lightweight fighter started its flight test program July 18. This represented the first flight of both the plane and the engine. A model with a similar airframe to the Gnat, the Midge with an Armstrong-Siddeley Viper, has been flying since last year.

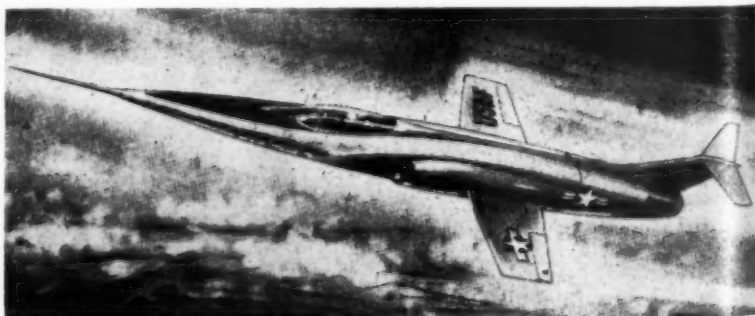
• Cessna Aircraft Co. is experimenting with boundary layer control on one of its two CH-1 helicopters. Air is piped to the rotors from a compressor driven by the copter's Continental FSO470-A engine. Other CH-1 was demonstrated to the military in Washington late last month.

• Beech Aircraft Corp.'s licensing agreement with Morane-Saulnier on the MS-760 twin-jet business plane covers distribution rights, including all French production of the aircraft, in Japan, Australia, Saudi Arabia, Mexico, Central America and all South America except Argentina.

• Work is being speeded on construction of the Vickers-Supermarine N.113 naval fighter following crash of the Model 525 from which it was developed.

• Frye Corp., headed up by former TWA president Jack Frye, is being established to build, among other projects, a slow-speed, heavy-lift workhorse transport plane.

• First flight of the de Havilland Gyron high-power axial jet was made in a Short Sperrin four-engine aircraft last month. Only one Gyron is fitted in the converted bomber, its power balancing the two 7,000-lb.-thrust Rolls-Royce Avons on the other side of the aircraft.



ARTIST'S VERSION OF F-104, highly secret Lockheed supersonic interceptor, appeared in the June issue of Japan's Aireview. Magazine says the F-104 has a maximum speed of more than Mach 2, that the plane had made 150 flight tests by last spring, having first flown March 28, 1954. Aireview says the plane has flown faster than Mach 2, that its service ceiling is more than 68,000 ft. A USAF production order for the F-104 is expected soon.

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When & Where

- Aug. 8-10—Second National Turbine-Powered Air Transportation Meeting (sponsored by the Institute of the Aeronautical Sciences, Seattle).
 - Aug. 10-14—Air Force Assn. Convention and Airpower Panorama, San Francisco.
 - Aug. 15-20—National Flying Farmers' Assn. convention, East Lansing, Mich.
 - Aug. 22-23—Symposium on Electronics & Automatic Production, Stanford Research Inst., San Francisco.
 - Aug. 24-26—1955 Ignition Conference sponsored by Scintilla Div., Bendix Aviation Corp., Sidney, N. Y.
 - Aug. 24-26—Western Electronic Show and Convention, Civic Auditorium and Fairmont Hotel, San Francisco, Calif.
 - Sept. 3-5—National Aircraft Show, sponsored by Air Foundation, Philadelphia International Airport.
 - Sept. 8—Airwork engine forum, sponsored by Pratt & Whitney and Bendix, Millville, N. J.
 - Sept. 15—Airwork engine forum, sponsored by Pratt & Whitney and Bendix, Miami, Fla.
 - Sept. 25-27—International Northwest Aviation Council's 19th annual conference, Yakima, Wash.
 - Sept. 26-27—Automation Symposium, sponsored by R.E.T.M.A., Univ. of Pennsylvania, Philadelphia.
 - Sept. 28-29—Industrial Electronics Conference, sponsored by A.I.E.E. and I.R.E., Park Sheraton Hotel, Detroit, Mich.
 - Oct. 3-5—Eleventh annual National Electronics Conference, Hotel Sherman, Chicago, Ill.
 - Oct. 4-6—11th Annual Spark Plug & Ignition Conference, sponsored by Champion Spark Plug Co., Toledo.
 - Oct. 5-7—National Airports Conference (sponsored by American Association of Airport Executives and the University of Oklahoma, Norman, Okla.).
 - Oct. 5-7—National Business Aircraft Association annual meeting and forum, Sheraton-Cadillac Hotel, Detroit.
 - Oct. 7—Aero-Medical Engineering Association symposium on "Escape from High Performance Aircraft," IAS Building, Los Angeles.
 - Oct. 11-13—Air Transpor. Assn. engineering and maintenance conference, Dallas.
 - Oct. 11-15—Nat'l Assn. of State Aviation Officials annual meeting, Dallas.
 - Oct. 11-15—Society of Automotive Engineers aeronautic meeting, aircraft production forum, Los Angeles.
 - Oct. 25-27—American Institute of Electrical Engineers technical conference on aircraft electrical applications, Hollywood Roosevelt Hotel, Los Angeles.
 - Oct. 27-28—Aircraft Electrical Society, 12th annual display, Pan-Pacific Auditorium, Los Angeles.
 - Oct. 31-Nov. 1—East Coast Conference on Aeronautical and Navigational Electronics, sponsored by I.R.E., Baltimore, Md.
 - Nov. 7-9—Eastern Joint Computer Conference (IRE-AIEE-ACM), Hotel Statler, Boston.
 - Nov. 28-30—Instrumentation Conference and Exhibit, sponsored by I.R.E., Atlanta Biltmore Hotel, Atlanta, Georgia.
- INTERNATIONAL**
- Aug. 22-24—American Rocket Society gas dynamics symposium, with Northwestern University co-sponsor, Evanston, Ill.
 - Aug. 30—International Civil Aviation Organization air navigation conference, Montreal.
 - Sept. 6—International Civil Aviation Organization conference on draft protocol to amend Warsaw convention, The Hague.
 - Sept. 6-11—Society of British Aircraft Constructors Aircraft Show & Flying Display, Farnborough, England.
 - Sept. 19-21—American Rocket Society fall meeting, Los Angeles.
 - Sept. 21—Southwest Automotive engine forum, sponsored by Pratt & Whitney and Bendix, Dallas, Tex.
 - Sept. 28-29—Industrial electronics conference, sponsored by AIEE and I.R.E., Detroit.
 - Oct. 1—Symposium on small gas turbine, sponsored by ASME and Brooklyn Polytechnic Institute, Engineering Societies Bldg., New York City.
 - Oct. 8-14—Ninth annual All-Texas Air Tour.

AMERICAN AVIATION

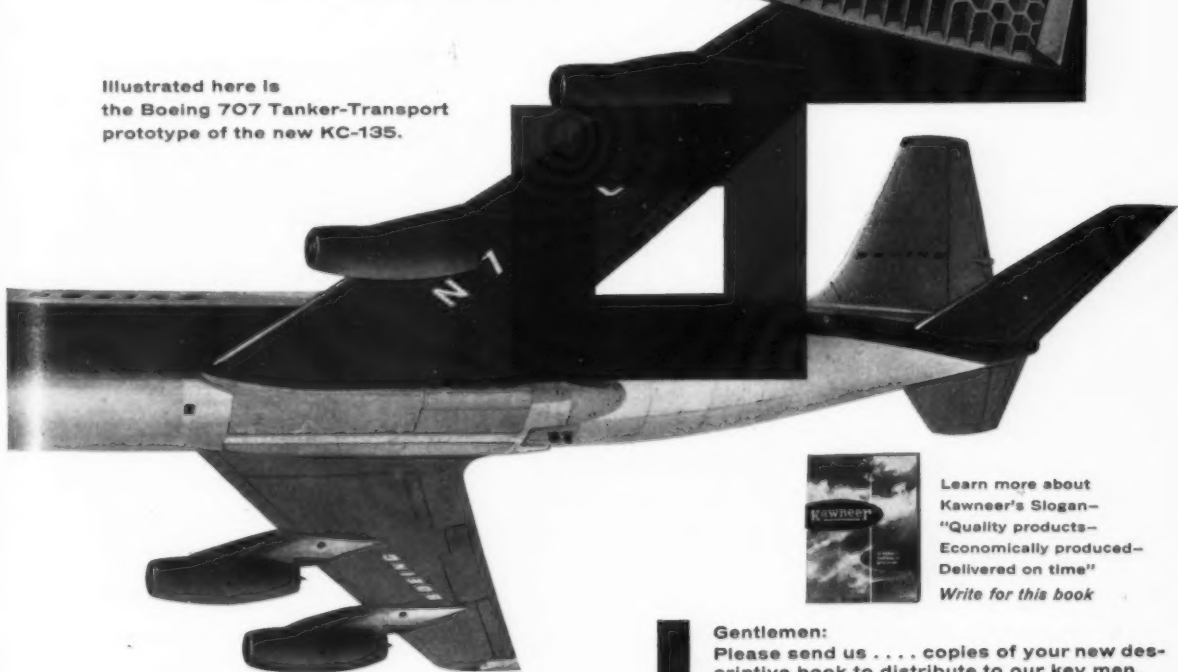
new Boeing jet tanker
to stretch America's Air Arm
with mid-air refueling

Almost daily, continuous flights halfway around the World are being made because huge KC-97 tankers meet bombers for refueling in mid-air. Tankers like the Boeing KC-135 will bring "targets" on faraway Continents within striking distance. The new Boeing KC-135 will haul extra large cargoes because *added strength* with

less weight is possible with metal honeycomb construction. Kawneer is helping build more planes like the KC-135 *faster* because of excellent metal bonding facilities to produce any kind of honeycomb assembly. Our experience in metal bonding honeycomb will be helpful to you in designing new applications of this material. This is another example of how you can benefit by Kawneer's integrated engineering and manufacturing service.

Kawneer will produce the ailerons for the KC-135 utilizing honeycomb sandwich construction

Illustrated here is the Boeing 707 Tanker-Transport prototype of the new KC-135.



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CASE INVOLVING AIR SECRETARY Harold E. Talbott's relationship as a partner in the management engineering firm of Paul B. Mulligan & Co., New York, continued a hot issue last week. Talbott denied he planned to resign as Secretary of the Air Force. Meanwhile, President Eisenhower told his press conference he planned to study the case to determine whether Talbott had violated a government ethic in continuing a business connection while still in public office.

Talbott, in trouble because of letters he had written to various companies promoting the use of the Mulligan firm, offered to resign as Mulligan's partner effective August 1 if the Senate Investigations subcommittee thought it would be in the best interest of the USAF. However, subcommittee chairman, Sen. John McClellan of Alabama indicated Talbott would have to make that decision himself.

Meanwhile, Mulligan testified that he had visited Convair-San Diego on a "get-acquainted" visit, but had carefully told Convair officials he could not solicit any business as long as Talbott held the AF post. Amid reports that Talbott might soon resign, rumor had it that the post might be offered either to Rep. Carl Hinshaw (R-Calif.), or Frederick C. Crawford, board chairman of Thompson Products, Inc.

Another new face soon to appear in the USAF materiel picture is that of Dudley C. Sharp, Houston, Tex. oil man. Sharp has been nominated to succeed Roger Lewis as Assistant AF Secretary for Materiel.

DESPITE CONTINUING OPPOSITION from west coast sources, some concrete signs are beginning to show that Air Force's dispersal policy is here to stay. Good examples: Northrop Aircraft's decision to build a 25,000-sq.-ft. missile pilot plant near El Paso; Boeing's option on acreage in Colorado as a potential site for Bomarc missile production and Beech Aircraft's plan to locate a new engineering facility (presumably missile) at Boulder, Colo.

MODERNIZED FORD TRI-MOTOR, expected to sell for about \$100,000 each, will be built by Hayden Aircraft Corp. at Bellflower, Calif. Tooling for prototype construction is now under way and airplane is scheduled for completion by April 1956.

Aircraft will be called the Stout Bushmaster, after William B. Stout who designed original Tri-motor and helped organize the Hayden firm. Gross weight will be under 12,500 lbs. to fit CAR Part 3 certification, and the Bushmaster will cruise at 125 mph with a 525-mile range. Engines will be three Pratt & Whitney R985s.

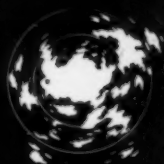
AIR FORCE'S PIONEER CONTRACT in civil overhaul of jet engines moved into high gear on July 23 as Southwest Airmotive Co. of Dallas completed and delivered the first of 1,200 Allison J33s (See story, P. 26). Company officials expressed certainty it would meet July quota of 10 engines, despite pressures of completing \$1-million facilities and tooling expansion in less than five months since contract was awarded.

FIRST PRODUCTION CESSNA T-37A twin-jet trainer will roll off the production line on September 1, two months ahead of schedule. Three prototype T37s already are flying.

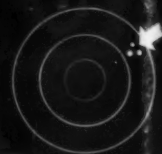
APPRENTICESHIP TRAINING WITHIN THE AIRCRAFT INDUSTRY is being pushed by the Labor Department in an effort to relieve the shortage of skilled workers. Bureau of Apprenticeship field staff members will call on management and union officials to cite importance of the program.

Bureau says only one-fourth of the aircraft plants are adequately equipped to conduct overall training of skilled workers.

2 In older radars, low-flying planes were lost in "ground clutter," appeared like this on scope.



3 New radar has power to eliminate all but moving objects. Low-flying planes appear on scope like this...



1 Radar scanners like this (in cutaway) detect distant objects, display them on radar scope...



4 With earliest possible warning, defenses gain time for effective interception.



NEW POWER SOURCE TIGHTENS RADAR DEFENSES

Million-Watt Klystrons Aid Detection of Distant, Low-Flying Planes

THE STORY BEHIND THE STORY:

What is the significance of the headline above? To borrow from an old baseball expression, "You can't hit 'em if you can't see 'em"—approaching planes that formerly evaded radar detection can now be "seen" at greater distances than ever before.

■ Behind this improved radar vision is a new family of high power tubes known as Megawatt Klystrons. These new tubes not only provide greater ability for beaming radar impulses against small and distant objects, but provide a new

improvement to a technique known as M.T.I. or Moving Target Indication. In radars without M.T.I. everything within the beam of the radar appears on the viewing scope. Images from trees, terrain, buildings, all combine to form "ground clutter" on the scope. M.T.I. eliminates this "ground clutter" by indicating moving objects only. Therefore with Megawatt Klystrons, approaching aircraft can be spotted sooner and defenses can be alerted more quickly.

■ Producing millions of watts of electronic power, these giant tubes make possible illumination of small objects

with radar impulses at greater distances to provide clear, sharp images on the radar scope. Furthermore, the Megawatt Klystron's stable performance and long life assure that these radar sentries are constantly on guard.

■ The Klystron tube made microwave radar possible. Developed by Sperry, it generates, amplifies or multiplies microwaves. Today, Sperry produces Klystrons covering a wide range of powers and frequencies for specific requirements—both military and industrial. To meet demands for these tubes, a new plant has just been opened devoted exclusively to Klystron research and production.

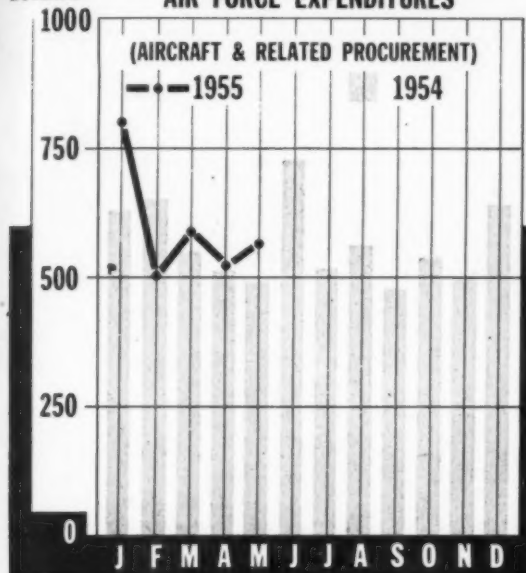
SPERRY GYROSCOPE COMPANY
Great Neck, New York
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Pulse of the Industry

MILLION DOLLARS

AIR FORCE EXPENDITURES

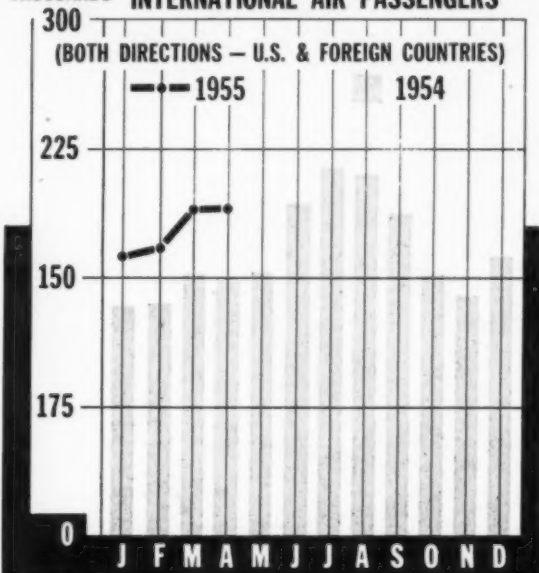
(AIRCRAFT & RELATED PROCUREMENT)



THOUSANDS

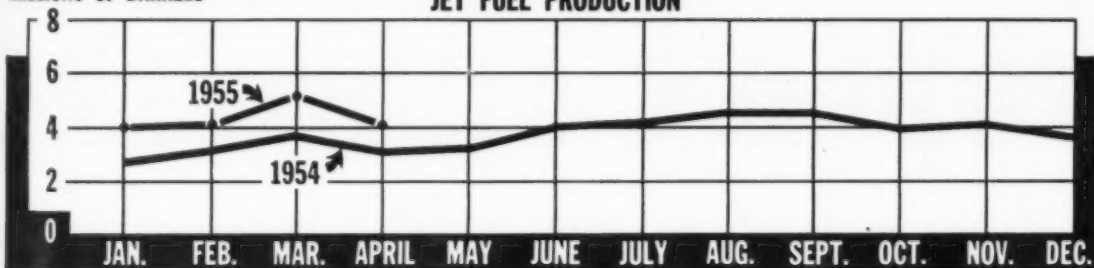
INTERNATIONAL AIR PASSENGERS

(BOTH DIRECTIONS — U.S. & FOREIGN COUNTRIES)



MILLIONS OF BARRELS

JET FUEL PRODUCTION



MILLION DOLLARS

CIVIL & MILITARY AIRPORT CONSTRUCTION—FEDERAL CONTRACT AWARDS



1950 = 100

AIRCRAFT MANUFACTURING PRODUCTION INDEX



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CHARTS BY AMERICAN AVIATION PUBLICATIONS

RESEARCH KEEPS

B.F. Goodrich

FIRST IN RUBBER



UNITED DC-6B

WORLD'S FIRST ALL TUBELESS AIRLINER is B. F. Goodrich equipped!

TUBELESS TIRES are now flying the airways. This United DC-6B Mainliner is the first plane to be completely Tubeless equipped and CAA approved for scheduled, commercial service. And it's equipped by B. F. Goodrich, inventor of the Tubeless Tire.

Greater pay load is one of the big advantages in switching to this new tire design. B. F. Goodrich Tubeless Tires on this airplane represent a weight reduction of approximately 48 pounds under regular tires and tubes.

In addition, B. F. Goodrich Tubeless Tires save time and money in ware-

housing and maintenance. Instead of a tire and tube, there's only the tire to purchase and stock—only the tire to mount and service. And the exclusive BFG dimpled tread design distributes tread loads more evenly, gives slower wear and less tread cutting.

There are specific safety features, too: no tube to chafe or leak—no tube to bunch or shift during take-offs and landings. A patented inner liner, built as an integral part of the B. F. Goodrich Tubeless Tire itself, replaces the conventional tube and retains correct inflation pressure much longer.

The B. F. Goodrich Tubeless Tire for commercial planes is the flying mate of two other BFG airplane Tubeless Tires; the high-pressure Tubeless Tire used by fast fighters and the world's first 300 mph Tubeless Tire. All three are typical examples of B. F. Goodrich leadership in Tubeless Tire research and development. *The B. F. Goodrich Co., Aeronautical Sales, Akron, Ohio.*

B.F. Goodrich
FIRST IN RUBBER

Circle No 8 on Reader Service Card.

AF Go-Ahead on 707 Spurs New Jet Race

By JOSEPH S. MURPHY

UNDER IMPETUS of Air Force approval for side-by-side production of KC-135 military jet tankers and Model 707 commercial jet transports, Boeing Airplane Co. has moved headlong into the battle for the world's airline jet market.

AF concession to Boeing, coming within weeks of announced plans by Douglas Aircraft Co. to build its DC-8 jet (AMERICAN AVIATION, June 20), has thrown a new competitive element into the commercial jet sales picture.

It erased the biggest single obstacle that stood in Boeing's way of landing a commercial jet contract during the past year and gave the Seattle firm a distinct time advantage over its arch-rival Douglas in quoting jet deliveries.

For Boeing, the Air Force step was the key to its existence in the jet transport race. Since American Airlines' purchase of the Lockheed Electra turboprop and Douglas' bid for the turbojet market, U. S. carriers have been jockeying for position to become the first jet operator.

• It is a foregone conclusion that several airline orders are imminent, and that the first to be placed could touch off an avalanche of buying that may involve a major share of the market in a brief period.

Had the AF action been delayed further, even a matter of weeks, it might have become an all-Douglas show with upwards of \$300 million in orders the prize. Instead, it now looms as a two-way competition between Santa Monica and Seattle, carrying an ominous warning to the Lockheeds, Convairs and Fairchild to come in now or bow out for good.

The Air Force statement that turned the tide was brief and simple. Air Secretary Harold E. Talbott said the AF is now satisfied that Boeing's commercial production "will not interfere with, nor delay," scheduled delivery of military tanker transports. Within hours of its release, Boeing's president William M. Allen said his company would take immediate steps to negotiate firm contracts with commercial airlines.

• As a result, airline officials now bent on buying jets find themselves

faced with a perplexing choice. Instead of the normal competition between airplane designs, such factors as delivery dates, state of development and the producer's past history with transports are moving to the fore as deciding issues.

As W. A. Patterson, president of United Air Lines, sums up the design competition, "There isn't very much difference in engineering and production in any of them." And what limited performance data is available from Douglas and Boeing on the DC-8 and 707 (see chart) bears this out.

For example, both are pegged in the 200,000- to 260,000-pound gross weight class, cruise at about 550 mph and are powered by four Pratt & Whitney J57 engines. The DC-8 will carry between 80 and 125 passengers and the 707 between 80 and 135 passengers. Range in each case will permit U. S. transcontinental nonstop operation in domestic versions and trans-ocean operation for international carriers.

With this similarity of "hardware" a secondary issue, here's how the Boeing-Douglas battle shapes up in other areas:



Boeing 707 jet prototype cruises high over Pacific Northwest during test flight.

• **Delivery Schedule**—Big item in Boeing's favor, one in which its standard KC-135/707 airframe plays an important role, is promise of delivery for early 1959 operation in airline service. Douglas estimates first DC-8 flights in December 1957, but full certification will not take place until about September 1959, giving Boeing almost a full year's edge on delivery.

• **Jet Experience**—New factor airlines are considering is the relative experience of the two plane builders in producing big jets. With the background of its 1,000-plane production of B-47s and current B-52 programs at Seattle and Wichita, Boeing has worked closely with airlines to make certain the 707 is a salable airplane throughout. Although the final success of this venture remains to be proved by signed contracts, it has been fairly well conceded among airline engineers for some time now that Boeing's 707 would be "hard to beat."

By way of contrast, Douglas has had little experience with large military jets of its own design, confining the bulk of its activity to fighters and twin-jet bombers. Sole experience in bigger jets at Douglas ironically comes from Boeing through second source production of the six-jet B-47 by Douglas-Tulsa division.

• **Past Transports**—Offsetting any Douglas disadvantage in military jet know-how, observers feel, is the Santa Monica firm's unchallenged role as producer of most airline transports in use today. At last count, commercial Douglas models in domestic U. S. airline service (ranging from DC-3s to DC-7s) numbered well over 600, more than triple that of its nearest competitor.

By-product of this success is the fact that some carriers now shopping for jets have had plenty of Douglas experience and none with Boeing, a factor that weighs in Douglas' favor and virtually assures some measure of split in the market.



Douglas DC-8 is only jet transport presently competing for orders with Boeing 707.

Typical of such carriers is National Airlines, now considered one of the forerunners among carriers ready to place jet orders. NAL's president G. T. Baker has stated that National would be "first to buy" and that he has orally agreed to purchase at least four DC-8s. Exact number of jets National is considering is believed to be six, which along with 12 Lockheed Electra turboprops and seven more DC-7s, represent a major slice of a planned \$95-million expansion program.

Competing with NAL for the distinction of first jet operation is United Air Lines. UAL officials have made it clear that the airline's next equipment step will involve turbojets, not turboprops, and that an order would be placed before the year-end. American Airlines' order for the Lockheed Electra is generally conceded to have forced its timetable forward to the point where decision is imminent.

With UAL and NAL in the jet picture are these carriers:

• **Pan American and Panagra**—together their order is expected to involve 25 jets.

• **American Airlines**—initial order will reportedly involve 10 to 15 planes.

• **Eastern and Braniff**—both are considering orders of four aircraft.

On the domestic scene, a first order by United will inevitably force American and Trans World Airlines to follow suit. Internationally, a similar step by a U. S. carrier (Pan American will probably be first) is bound to bring immediate reaction from such foreign competition as KLM Royal Dutch Airlines and Scandinavian Airlines System.

As it now stands, the jet sales battle is strictly a Douglas-Boeing affair, with all trace of earlier British Comet competition removed. If this is to change, some high level decisions are due soon among other U. S. manufacturers. Here's how they stand:

• **Convair**—With the short-medium haul transport market virtually lost to Vickers-Armstrongs and Lockheed with the Viscount and Electra, the San Diego firm is reportedly back in the big jet business. Its success will obviously hinge on happenings of the next few months.

• **Lockheed**—With the first Electra turboprop contract in its pocket and virtual assurance that more will follow, the "heat" of jet competition is lessened. Air Force development contract for an advanced jet tanker surely keeps Lockheed in the running, but with its timing several years off, may relegate the firm to the "second-round" of jet buying.

• **Fairchild**—Real "dark horse" in the jet race has already proposed one transport model and presumably will not take the Boeing-Douglas market monopoly without some bid. Here again, the pressure of timing is bound to force action soon.

First U. S. Jet Transport Order—Which Will It Be?

Top officials of U.S. and foreign airlines now planning upwards of \$300-million in jet transport orders are looking at these two aircraft in their bid to maintain a competitive position on world air routes. Here's how they compare:

	DOUGLAS DC-8	BOEING 707
Gross Weight	211,000 pounds (D) 257,000 pounds (O)	200-250,000 pounds
Cruising Speed	550 mph	550 mph
Range	Transatlantic & transcontinental nonstop	Transatlantic & transcontinental nonstop
Seating Capacity	80-125 passengers	80-135 passengers
Engines	4-P&W J57	4-P&W J57
Dimensions:		
Length	140 ft. 7 in.	134 ft. 6 in.
Wingspan	134 ft. 7 in.	130 ft. 10 in.
Height	40 ft. 2 in.	38 ft. 3 in.

Note: D-Domestic O-Overseas

British Display Latest Achievements At Pre-Farnborough Air Show

By JAMES HAY STEVENS

London—During the past five years the name Farnborough has become synonymous with the Society of British Aircraft Constructors' Display each September. Yet Farnborough was the very cradle of British aviation, for not only was it here, on Laffan's Plain, that Cody made his first airplane experiments, but the Army's kite, balloon and airship companies were stationed there from 1905.

To celebrate the passing of fifty years since that event, the Royal Aircraft Establishment held an open day Golden Jubilee for invited guests July 7. This exhibition was organized by the director, Sir Arnold Hall, to show the whole range of activities of the R.A.E. It was brilliant because of the ingenuity shown in advertising what was being done on classified projects without revealing secrets to any enemy agent who might have infiltrated the security screen—even so, several security restrictions were lifted specially for this show.

It also was brilliant in the way that the most specialized scientific and technical activities were displayed intelligibly for the ordinary aviation operator. Sir Arnold Hall's courtesy in inviting the ladies to such an event is one which the S.B.A.C. might well copy on at least one of the guest days of its display.

The R.A.E. display was divided into a fascinating historical section—including a Cody biplane, complete with bearded dummy and World War I fighters—an exhibition shed showing the principal activities of each R.A.E. department, "at homes" in the departments, and a two-hour flying display. To have seen everything would have taken a week—but the highlights which struck the writer were these.

• **Heat barrier preparations** are well in hand at the Structures Department, where a set-up for strength-testing wings under simulated dynamic heating was demonstrated. The airplane wing is loaded in the usual steel girder frame and the surface is heated by a vast battery of infra-red tubes. These tubes and their reflectors are freely suspended some six inches from the wing skin, so that they do not interfere with the loading. Application of heat is not a very difficult matter, but its precise control is.

The R.A.E., in conjunction with the English Electric Co., had developed a closed-loop analog heat simulator. This is fed with programmed aero-

dynamic data, which it computes and uses to control the heat output of the infra-red tubes. Any flight condition up to Mach 4 can be computed and simulated with the present equipment.

The demonstration unit consisted of a small piece of light-alloy structure at mid-chord in a supersonic wing, heated by eight 30-inch tubes, with cur-



JET-DEFLECTION GLOSTER METEOR—One of newest and most interesting planes demonstrated at R.A.E. golden jubilee show at Farnborough.

rent controlled from a mercury vapor transformer. The program of aerodynamic data in the computer was for a "flight" accelerating from Mach 1 to Mach 2 at 50,000 feet in 50 seconds, the speed being held thereafter for several minutes. The ambient ISA temperature at that height is -70°F , yet the structure soon heated to $230^{\circ}/250^{\circ}\text{F}$ —or well above boiling—with very noticeable distortion.

To economize on current, a black surface is used on tests, which absorbs the radiant heat in a quarter of the time that a silver one would. Good results are being attained with $\frac{3}{8}$ inch by 14-inch Phillips quartz tubes having a radiation intensity of 50 kw/sq. ft. These tubes have a 100-hour life operating at 3 kw on 460v current and almost indefinite life at 1 kw on a 230v supply.

It can be assumed that this form of heat-compensated structure testing is in use on the airframes of the English Electric P.1 and Fairey FD-2 airplanes.

• **A Comet investigation film** revealed some new angles on how the R.A.E. set about its task. Once major break points had been established from the first wreckage, dynamically similar models were fired from towers, so that fall behavior could be plotted. This confirmed impact attitude and the pattern of the pieces on the sea bed, the latter part of the search being actually directed from this evidence.

To check for possible structure damage in the wing due to fuel vent valves freezing, a wing was filled with fuel

and refrigerated. Other tests included power control "failures" and fuel programs on a flight simulator, and over 100 hours unpressurized flying in a Comet investigating flight loads, first up to Mach .7 and 275 knots EAS and later to Mach .8 and 300 knots EAS.

• **The Bristol Britannia tank test** specimen was shown actually undergoing its schedule of torture, the tips of the 150-foot wings rising and falling some four feet under the action of hydraulic rams. On July 7 some 3,800 four-hour "flights" had been made without any failures.

• **A Gloster Javelin model** suspended under a balloon gave a topical touch in view of recent press criticisms. The model, about 1/10th scale, was dynamically similar and is used for spinning tests. The one shown is radio-controlled, but first tests were made with a clockwork sequence for control movements and recovery-chute release—a five-second error in the clockwork resulted in the loss of the model after half-a-dozen flights.

The purpose of this new technique was to give representative spinning trials before the actual airplane was risked in a maneuver for which the behavior of a delta wing was unknown. Spinning tunnel model tests are not representative, because of the low Reynolds number, unless a correction factor obtained from similar full-scale airplanes can be applied. In the case of the delta wing there was no previous full-scale spinning experience.

A film showed the manner of these tenth-scale model tests. The model was suspended under the balloon basket and was hand-cranked to give it initial rotation, before being released from 3,000 feet. At release, controls were set: full right rudder, full up elevator and neutral ailerons. As the model accelerated under gravity the spin developed fully, showing a violent change in pitch from horizontal to vertical in each turn and losing a lot of height.

Recovery took $1\frac{1}{2}$ seconds, being initiated by left rudder and right aileron, followed by down elevator. The model came out in a near vertical dive and rolling quite rapidly because the

right aileron was maintained for five seconds. Centralizing ailerons ended by pulling the model out of a dive in a zoom at the top of which the recovery chute came out.

The radio-controlled model will allow different recovery sequences to be investigated. It is understood that the first model spins have been proved in full scale and that the second model is now largely of academic interest.

• **Aerodynamics Department** also revealed the rocket-boost supersonic free-flight model technique it uses at the nearby supersonic Larkhill range. Single or six-foot paired cordite rocket models have spigots upon which the models are mounted. When the charge has burnt the fin drag causes the rocket to slide aft and drop away. Models shown were about three feet long with sharp noses and swept fins with a delta tailplane atop.

Delta and low-aspect ratio straight wings of sharp-edged thin section were much in evidence. The model carcass was stuffed with controlling gear and telemetry equipment. Test set-ups shown included pitch damping (phugoid) after flick elevator movement, control effectiveness in pitch and roll, aerodynamic damping of a wing (a spin-

of which photographs were released by the then Minister of Supply, Duncan Sandys, in the same year—and none is likely to have been new then. (CTV means command test vehicle, RTV research test vehicle and GPV general purpose vehicle.)

Films showed the complete success of the British system of concentrically-mounted boosters. These are clamped, either singly or in pairs, along the main carcass and between the winglets. At the tip there is a toed-out pointed nose and at the tail the rocket venturi also points slightly out.

When the cordite charge has burned out, an explosive cord or bolts holding the boosters together at the front is fired and the empty cases fall back and out—without visible disturbance to the flight of the missile. All the films showed the launching of "dead" rounds, i.e., coasters, save one, where the tell-tale jink in the smoke trace indicated the takeover of command guidance.

• **A new technique** was a recovery system for the large RTV2 when fired over the sea. A first drogue is released at 1,340 fps, then when the speed has fallen to 400 fps a parachute deploys, but with the canopy held closed by

courses for subsequent analysis. A cathode-ray presentation shows the target (dot) with the locked-on beam and the missile, a half-inch dash. An important feature of this simulator is that it shows the angle of the missile as it turns after the target.

• **Security unwraps** for the R.A.E. Jubilee included:

A much-instrumented and strain-gauged Hawker Hunter for transonic control and load research with a variable-incidence tailplane.

Re-arming demonstration showing how the Hawker Hunter gun-pack is replaced by a loaded one and the gun barrels can be changed at the same time.

Rolls-Royce "Flying Bedstead" in the "flesh."

Prone-piloting Armstrong Whitworth Meteor.

Jet-deflection Meteor made a demonstration landing and showed a markedly lower approach speed due to the "unloading" of the wing. An increase of power just before touchdown produced clouds of dust and gave the impression of hovering. The landing roll was not so much greater than that of a personal airplane. Jet deflection not only lowers the stalling speed but gives better control at the stall, so that a pilot can risk approaching without much gust margin.

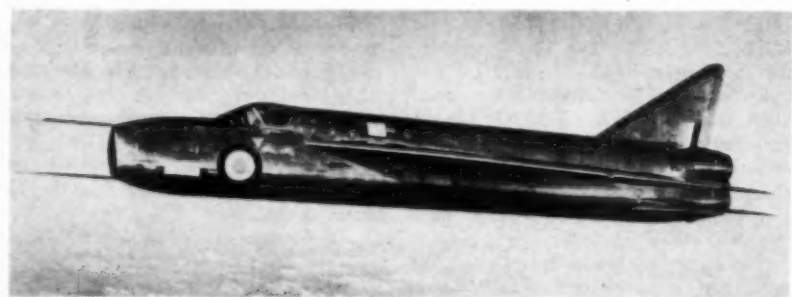
Leading-edge "nicks" instead of fences for controlling wingtip airflow.

Color-Schlieren for supersonic tunnel airflow observation. By passing the light source through a prism before reaching the collimating mirror, the refracted beam shows shockwaves blue and expansion zones pink—red—is first method of delineating expansion clearly.

Transonic tunnel investigation into "loss of sweep" at wingtip and fuselage due to airflow interference. A waist in the fuselage maintains the isobars parallel with the leading edge, thus arriving at the "coke-bottle"—even though a constant nose-tail drag line was not originally being investigated!

• **English Electric P-1** supersonic fighter in flight demonstration. The airplane arrived in a fast pass at 50 feet, inaudible until actually abreast and leaving a trail of whiplash vortices and shockwaves when it was out of sight. Deceleration by its rear fuselage airbrakes was rapid and enabled the pilot to make a tight circuit round the airfield perimeter.

The rate of roll, with the curious across-tip ailerons, and small span, was very high. Direction was also well maintained when rolling slowly. One had the impression that, probably due to the 70 degree wing sweep, the fuselage attitude changed considerably in pitch for relatively slight alterations in flight path.



ENGLISH ELECTRIC P-1 INTERCEPTOR FIGHTER—First British plane to exceed speed of sound in level flight, photographed during test flight.

ning rocket model), and total drag of a cockpit hood measured quite simply by a spring and a contact-braker gap.

These ground-fired rocket models replace the unsuccessful air-launched Vickers test vehicles of 1947—which, in turn, replaced the manned Miles M-57 Mach 1.5 project, which was canceled when the airplane was 50% complete.

• **Guided weapons** appeared in many places—but upon closer inspection they proved to be simply test vehicles. Nevertheless, the exhibits, plus several films, gave a good idea of the general direction of development—and without helping the enemy!

One would say that no missile shown was less than four years old: the omnipresent CTV 1 was on show with its telemetry at the SBAC Display in 1952, while RTV 2, CTV 5 and GPV proved to be the "weapons"

time-spring catches, which only release after further slowing.

Upon entering the water an immersion switch releases and inflates a CO₂ balloon and the round floats with some three feet of its nose above the surface. The RTV2 shown, it is about 20 feet long and 18 inches in diameter, was undamaged apart from the rear tips of its four winglets, which had the four smoke-trace brackets break off.

Side displays revealed that the R.A.E. is fully up-to-date with weapon-locking radar—using a friction-controlled gyroscope and spinning antenna—telemetry equipment, pre-flight test gear and computers and simulators. On demonstration were simulators for command link guidance, beam riding and semi-active homing. The beam-rider simulator has a control for the "target" and a graphical head gives a paper record of both missile and target

Slow-speed" flying, at a guess some 150 knots, was made with leading and trailing edge flaps and landing gear down and at a high angle of attack, but with manifest confidence. During a simulated landing approach, the pilot made steeply banked S-turns,

obviously untroubled by dutch roll or aileron fade-out.

Gleaming in natural metal finish, without the filler common on British high-speed airplanes, the P-1 made a really good impression from the confident way in which it was handled.

Congressional Directive Gives CAA Million-Dollar Navaid Headache

By LOIS C. PHILMUS

A Congressional directive "that no stations or facilities now operating be discontinued by the Civil Aeronautics Administration" has presented CAA with a fiscal 1956 planning problem. Although it received its requested \$106,150,000 for operation and regulation, of which \$90,105,000 is for air navigation and airways, CAA had planned on discontinuing about 61 interstate aeronautical communications, (INSAC) stations and a few other facilities.

The Congressional order to continue all present facilities has put CAA about \$1 million in the hole on its planned program. CAA has formulated three alternative plans that have been submitted to Undersecretary of Commerce Louis S. Rothschild for decision.

Reliable sources report that it may be necessary to return the finalized program to Capitol Hill, with a plea for permission to discontinue certain individual commissioned facilities despite the directive in order to make up the deficit.

• The DME program is expected to be the hardest hit. As of June 30, the end of fiscal 1955, CAA had commissioned and was operating 231 DME stations. It is presumed that these will continue in operation, but hopes to have 447 stations going in fiscal 1956 are gone, observers feel.

A total of 142 DME stations were operating on test at the end of June and of this total 103 were ready for commissioning and operation if sufficient funds were available. Rothschild put a temporary "freeze" on an additional 74 stations which were in various stages of construction. The freeze presumably will be in effect until the TACAN situation is finally resolved.

The operation and regulation (O&R) budget cannot be compared to budgets of previous years because of its new structure. Following Hoover Commission recommendations, CAA's new budget procedure allocates percentages of supporting services, i.e., general counsel, Administrator's salary, to airways, safety and airport budget totals.

• An American Aviation compilation of costs in operating major air navigation facilities indicates CAA would need roughly about \$34,018,408 to operate all commissioned facilities and more than \$41 million to operate the whole program (See table for status of major programs).

AMERICAN AVIATION estimates have been based on average costs for operating each type of facility as supplied by CAA, as follows:

INSAC	\$43,274
(range \$31,692-\$204,040)	
Traffic Control Center	414,669
(range \$120,797-\$1,089,800)	
Control Tower (excluding radar)	71,941
(range \$32,278-\$155,741)	
Combined Station/Tower ...	75,833
(range \$55,435-\$169,434)	
H/I Approach Light	7,482
DME	3,521
ILS (w/o Com. Loc.)	11,146
Airport Surveillance Radar ..	57,177
PAR and ASR	109,230
VOR	6,267
TVOR	4,641

CAA has broken its \$90,105,000 airways money into two categories: \$67,237,000 for personal services and expenses and \$22,868,000 for actual facilities operation and maintenance. Although the average costs shown above include salaries for technicians, the CAA still must provide funds for additional Air Traffic Control Center and Tower personnel which Administrator Fred B. Lee told Congress were so badly needed.

• Operating funds, officials have stated, must be kept in reserve for running new IFR facilities as they are established during the year. Congress slashed CAA's \$23-million request for establishment of facilities to \$16 million but this is not expected to seriously affect the radar and other bad-weather flying installations.

The Senate Appropriations Committee explained the cut: "It is the view of the committee that the Administration should proceed slowly with installation of new equipment while the question of the type permanently to be used is being determined. The committee feels that this amount is adequate to meet the needs for other new facilities in the Federal airways system during the coming year."

The statement was obviously aimed at CAA programming for 23 new VORs and 55 new DMEs, originally programmed for 1956, with funds remaining for the majority of the balance of the program, which concentrates on air route traffic control aids, totaling \$10,497,325.

Establishment of Air Navigation Facilities

STATUS OF MAJOR PROGRAMS IN U.S.
(As of June 30, 1955)

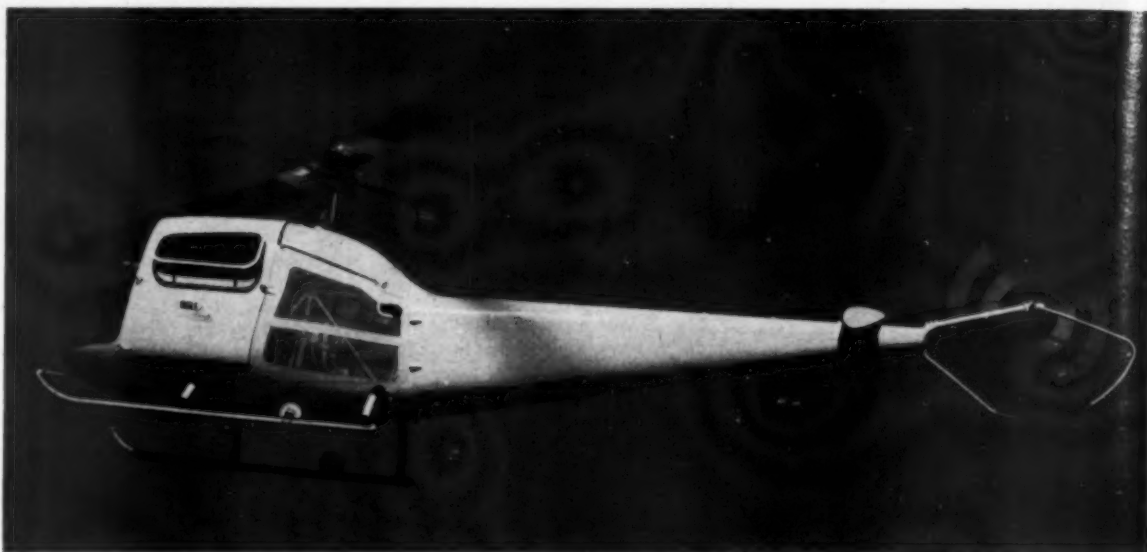
Program	Symbol	Unassigned	Underway	Operating on Test	Commissioned to Date	Total Program Thru Fiscal 1955
Air Route Traffic Control Centers	ARTCC	0	0	0	26	26
Airport Surveillance Lance Radar	ASR	0	14	0	30	44
Airport Traffic Control Tower	ATCT	0	1	0	96 (A)	97
Approach Lighting System	ALS	0	3	0	6	9
Combined Station/Tower	CS/T	7	17	0	71	95
Distance Measuring Equip./ILS	DME/ILS	0	2	3 (B)	17	22
Distance Measuring Equip./Vor	DME/VOR	4	74	133 (C)	214	425
Instrument Landing System	ILS	4	9			
Lead-in Lighting System	LIS	0	2	0	152 (D)	165
Precision Approach Radar	PAR	0	13	0	1	3
VHF/DF Equipment	VHF/DF	13	45	0	10	23
VHF Omirange	VOR	1	49	0	0	58
VHF OMNIRANGE/Terminal	TVOR	0	7	1	400	451
VHF Visual-Aural Range	VAR	0	0	0	4	11
				0	6	6

(A) includes 18 commissioned ATCTs assigned for conversion to CS/Ts.

(B) includes two installations which have been completed but not listed as operable.

(C) includes 101 installations which have been completed but not listed as operable.

(D) includes a total of six installations commissioned without glide slope.



NAVY HAS ORDERED 10 Bell HUL-1 four-place helicopters at a cost of \$1.7 million. HUL-1 is a larger streamlined version of HTL-6, now in production for Navy. Commercial sale of new model, designated the Bell 47J, begins early next year.

Southwest Airmotive Completes Tooling for J33 Overhaul Work

The five-month race to complete its \$1-million expansion and begin production on its \$3-million J33 jet overhaul contract by July 31 has been won by Southwest Airmotive Co. of Dallas. Since becoming the first civilian base to receive a jet engine overhaul contract (AMERICAN AVIATION, April 11), the company has been faced with problems of tooling up for the jets, building new facilities at Love and Amon Carter Fields, training its personnel, and phasing out its AF piston engine overhaul contract.

The tooling and testing devices were found to be the big problem, since

most major items are hand-made to specifications. To supplement manufacturer-supplied equipment, Southwest Airmotive has been fabricating special tools, racks and jigs designed by its own mechanics.

Construction has been virtually completed on the 15,000-square-foot addition to the Love Field engine shop building and on the 10,000-square-foot testing and shipping building at Amon Carter Field, where the engines will be trucked after overhaul at Dallas.

• In the Love Field addition, two rooms have been pressurized. Facilities for 80 tons of air conditioning have been installed to cool water used in certain testing devices. A custom-designed cylindrical spin pit for testing jet impellers was fabricated of 10-inch thick steel. The spin pit will be operated with steam from a large industrial boiler in a special room built of solid concrete.

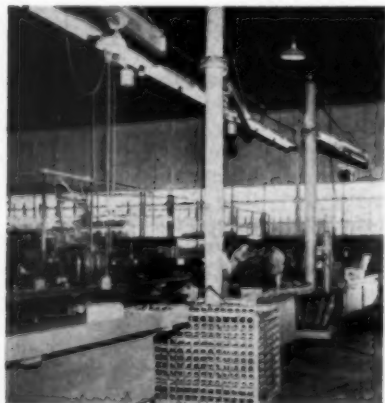
A complex system of mechanical conveyors had to be installed for the jet production line, since the Allison engine weighs about 1,800 pounds and is shipped in a metal drum of equal weight. The conveyor system was unnecessary for the piston-engine job, with parts moved largely by hand on four-wheel dollies.

Jet overhaul procedures were taught to key personnel at the Middletown, Pa., Air Force Depot, which is beginning to phase out its J33 overhaul

program to make way for more complex engine work. On-the-job training, in turn, is being given to other mechanics and technicians by the Middle-town-briefed experts.

• Throughout all this, Southwest Airmotive has also been planning for its new business flying center at Love Field. It must vacate its present site by September 1 to make way for the new terminal building.

The company will move its distributor-sales division to a temporary location. Its aircraft shop hangar will be moved to its new location in the fall. During the transition the company will continue its overhaul and maintenance activities for business aircraft in one of the three remaining buildings on the southeast side of the field. • • •



OVERHEAD ELECTRIC CRANES are used by Southwest Airmotive in new facilities for J33 jet overhaul program.



JET IMPELLER SPIN PIT at Love Field engine shop, installed for J33 overhaul, contains 57,000 lbs. of steel. Impeller mounting pedestal is seen in center.

Airlines Plan Expanded Use of Reservoirs

• Automatic inventory systems developed to help make best possible use of available seat space

By HENRY P. STEIER

New systems for automatic inventory-keeping and rapid communication of information on airline seat space have been developed. The efficient use of that most perishable of commodities, seat space, on a given flight, and ways of handling seat inventory, have been the concern of an Air Transport Association Automatic Reservations Subcommittee. For three years a practical and successful automatic reservations system has been at work for American Airlines in New York City, and expanded use seems imminent.

Keeping in mind that there are several principal types of airline traffic generation, The Teleregister Corp. has designed several systems to fit specific requirements of the principal types, but which will permit combinations or modifications to suit individual airline needs.

American Airlines, which pioneered in automatic reservations data handling, installed an experimental Availability Reservoir at Boston about eight years ago. Later, working with AA's Charley Ammann and Rodney

King, Teleregister Corp. developed the Magnetronic Reservoir installed at LaGuardia for AA in 1952 (AMERICAN AVIATION, July 7, 1952.)

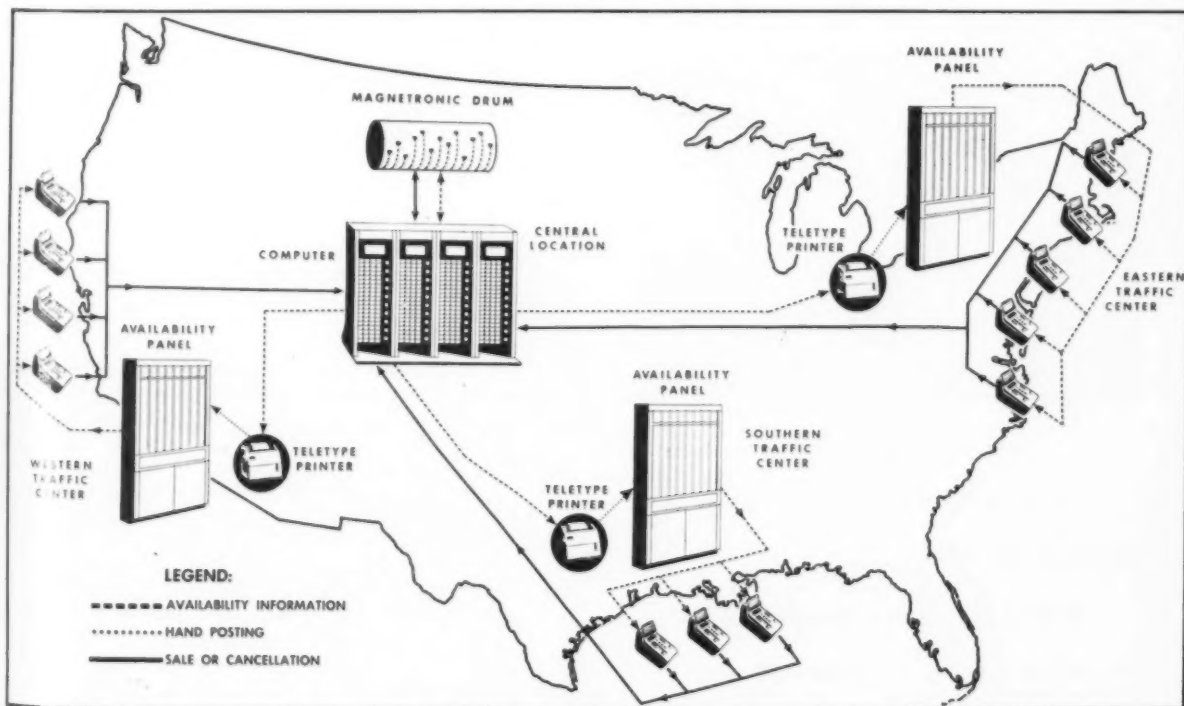
• The original Magnetronic Reservoir was a system using a magnetic drum that stored flight reservation and availability information covering a ten-day period. Electronic data processing circuits sent data to storage, or selected and processed data according to queries from push-button handsets in ticket and central reservations offices of the airline. The handsets were operated by insertion of coded plates representing flight legs of scheduled trips. A Master Agent set in a central office inserted or changed inventories at will.

Today, the Magnetronic Reservoir system can handle the exact seat count for each flight leg of trips for 31 days in advance. This system is particularly suitable for an airline that generates most of its traffic at one large center. A Master Agent set, capable of adding or subtracting wholesale quantities of data, is used to record inventory for the 31st day. This is done at midnight, when flights for the day are ended, in the air, or have been completed. The

standard make-up of flights is stored in a special area on the magnetic drum and, by a single operation on the Master Agent set, the day's inventory is transferred to the 31-day inventory area.

• A key electronic device used is the transceiver. One transceiver is enough for every ten Agent Sets. Ordinarily, 47 leased wires would be required to carry information between an Agent Set and the central storage and data processing equipment. For economy in leased line rental, the transceiver converts data to serial form so that a pair of leased lines suffices. At the central office another transceiver reconverts the data to parallel form for presentation to the central equipment.

To take care of situations where more than one Agent Set queries the central equipment at the same time, a Master Seeker electronic device, connects the Agent Sets sequentially. The second set waits until the first has been answered and so on. A remote call takes about three seconds. Traffic rates determine waiting time, but studies have shown the average wait time is under five seconds. The number of



Plan for an integrated automatic reservations system. United Airlines may adopt a similar system.



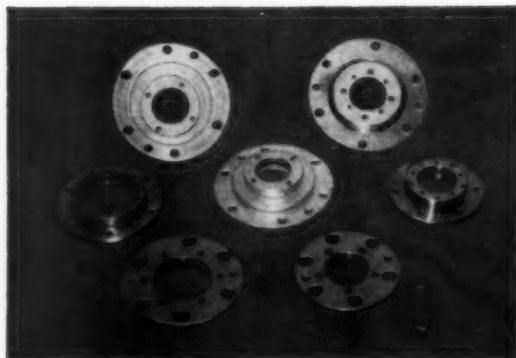
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Agent Sets might be a hundred or more.

• **Particularly applicable** to airlines with several major reservations traffic generating centers, the 'Availability Reservoir' system is electromechanical in design. With the exception that it has no magnetic storage drum, this system uses the same equipment as the Magnetronic Reservoir, but an exact seat count is not automatically maintained.

Information is stored manually on "Availability Panels" that have 50 horizontal rows of electrical circuit jacks. There are 35 jacks per row corresponding to 31 days plus four extra positions for special flights, holidays, etc.

Yellow and red plugs are manually inserted at a centralized panel location. The plugs establish different electrical circuit conditions corresponding to three conditions of availability. When an Agent Set queries the panel, an unplugged position causes a steady light to be displayed on the agent set. This indicates that space is available. A yellow or red plug position causes a flashing light to be displayed. This indicates that either a predetermined "cushion" level has been reached, or the space is sold out. The agent then may move a switch to a "check" position, and panel positions having yellow plugs will then cause the associated agent set lamp to flash. This indicates the flight legs that are sold down to the cushion level. Further checks must then be made before selling space.

A central record of seat count is maintained in ledger or other posted form and is the source of information from which a clerk keeps the availability panel current.

United Airlines recently installed Availability Reservoir equipment in their New York City, Chicago, Los Angeles and San Francisco locations. It is reported that UAL soon intends to link its Availability Reservoir systems to a Magnetronic Reservoir system at Denver, Colorado.

For airlines that generate a major part of reservations traffic from a large number of widely distributed points connected by teletype network, Teleregister Corp. has devised an integrated system that maintains a central location for automatic data storage and processing linked to satellite Availability Systems.

• **At satellite locations**, Agent Sets query the availability panel. When space is sold or cancelled, the remote agent transmits a coded teletype message to the central Magnetronic Reservoir. The teletype tape at the central location is automatically fed into the data processing and storage equipment, causing seat count to be changed. When the available seat count reaches a predetermined cushion level, and when it reaches zero, the central equipment originates a teletype message to apprise the remote selling offices of the inventory. Availability panels are accordingly changed by manual plugging.

At a supervisory position in central reservations control there is located the Master Agent set and a teletype printer. Calls that require special handling, such as wait list messages, cancel messages into a flight already in "cushion" condition, are printed by this teletype printer.

A Flight Information Feature may be added to any of the systems. It supplies information on whether flights are arriving or departing on time, or if late in arriving how late. Increments of five minutes late or early are shown by lighted lamps in the Agent Sets.

Some idea of the volume of queries per day in an airline's operation is given by the fact that peaks of 45,000 per day have been reached on AA's Magnetronic Reservoir equipment in the New York City area. AA's equipment has been operating 99.8 percent of the time since 1952. The Boston Availability Reservoir is still operating. According to Charley Ammann, who is now AA's Director of Advanced Process Research, maintenance time on their Reservoir is so slight that it is not worth keeping track of.

There are reports that AA intends to install Availability Reservoirs at points remote from New York City. • • •

Aircraft Stocks Losing Investment Appeal

• Renegotiation fears, threats of investigations and peace moves tend to obscure underlying values.

By SELIG ALTSCHUL

AIRCRAFT equities, the favorites of investment circles last year and during the early part of 1955, have developed decided lackluster attributes in recent months.

The vicissitudes attending the aircraft industry's sharp market fluctuations, up and down, are not difficult to find. In general, market quotations of aircraft equities have pretty much followed the fortunes of the industry.



Altschul

For example, following the Korean outbreak in June 1950, stimulation of all defense industries found quick reflection in aircraft stocks, as a group, attaining a peak in February 1951, almost double its low of 1949.

While there were rather wide fluctuations in the individual aircraft equities throughout 1951, 1952 and most of 1953, with but a short exception, there was no great appreciation over the peaks established early in 1951. This was a period where excess profits taxes and the renegotiation processes were in effect and established relatively modest evaluations of the earning power then being generated by aircraft companies.

• Late in 1953, however, it became evident that the expiration of the excess profits tax impost that year-end could remove a large burden from aircraft earnings. This factor was soon anticipated in a sharp upward move which continued almost unabated through 1954 and into the early months of 1955. The peak appears to have been attained in February 1955.

Record-breaking earnings reported by most aircraft companies on 1954 results did, in fact, appear to justify the higher market quotations then established.

As with all violent fluctuations, however, corrective action soon began to appear and tended to level peak quotations. Whereas there was not a cloud on the aircraft investors' happy horizons of 1954, factors present all the time were suddenly discovered in 1955 and began to assume serious propor-

FINANCIAL DATA ON AIRCRAFT BUILDERS									
Common Stock Quotations*						Current Price Times Earnings Based On			
	1955				% of Change Since 12/31/54	Per Share Earnings		Actual	
	Current†	High	Low	12/31/54		Actual 1954	Estimated 1955	Actual 1954	Estimated 1955
Beech	29	30	23	25	+ 16.0%	\$5.64	\$6.00	5.1	4.8
Bell	26	38	22	24	+ 8.3	2.47	2.25	10.5	11.6
Boeing	59	89	55	74	- 20.3	11.39	9.50	5.2	6.2
Cessna	19	22	16	18	+ 5.6	2.97	3.25	6.4	5.8
Chance Vought	32	68	30	32	6.15	3.75	5.2	8.5
Curtiss-Wright	20	24	16	18	+ 11.1	2.35	3.00	8.5	6.7
Douglas	68	91	62	87	- 21.8	9.80	7.50	6.9	9.1
Fairchild Engine	13	22	13	17	- 23.5	1.43	1.35	9.1	9.6
Grumman	34	46	33	38	- 10.5	5.61	5.25	6.1	6.5
Lockheed	44	64	40	51	- 13.7	7.94	6.50	5.5	6.8
Martin	25	44	25	32	- 21.9	7.85	4.00	3.2	6.3
McDonnell	34	43	28	31	+ 9.7	5.03	6.25	6.8	5.4
North American	58	63	47	52	+ 11.5	6.46	8.75	9.0	6.6
Northrop	25	40	24	34	- 26.5	2.63	7.50	9.5	3.3
Republic	34	44	31	40	- 15.0	6.71	10.00	5.1	3.4
Ryan	31	51	29	31	5.15	4.75	6.0	6.5
Temco	13	17	13	15	- 13.3	1.75	1.60	7.4	8.1
United Aircraft	68	94	66	78	- 12.9	7.65	8.00	8.9	8.5

NOTES: Calendar of fiscal years used as reported by individual companies. Adjusted for all stock splits.
* All fractions omitted.
† As of July 15, 1955.

tions. First, there were rumblings of tighter renegotiation proceedings to recapture the record-breaking earnings of 1954. Almost concurrently, various Congressional committees were attracted by these same aircraft earnings as a good basis for investigations.

• While it is yet too soon to assess the full impact of the possible recapture of aircraft earnings through actual renegotiation and the threat of Congressional investigations, the psychological shock has been real enough and has resulted in a widespread flight of investors away from aircraft equities.

After this initial wave of liquidation of aircraft securities had abated and some stability established at lower levels in recent months, new apprehensions soon appeared. This was attributed to the "Big Four" peace talks at the "summit" meeting in July. Once again psychological fears arose that a new trend in wide-scale disarmament might soon appear and result in a drastic curtailment of aircraft production.

Of course, all this is reflected in the marketplace. Amidst these broad industry moves, discerning appraisals are directed at the position and outlook of

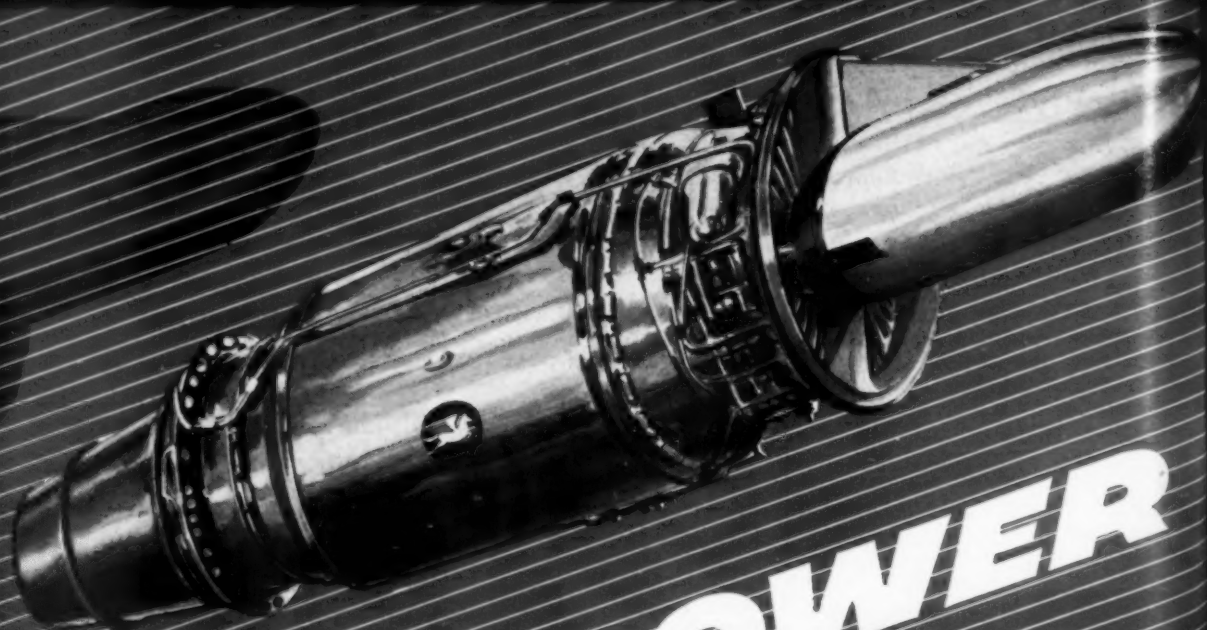
the individual companies. This results in significant cross-currents with definite selective patterns clearly emerging.

The accompanying table reveals the 1955 market quotations through July 15 for 18 individual aircraft companies. As investment values are established primarily on earnings—current and future (which in turn support equity accumulations and dividend disbursements)—actual 1954 earnings together with our own estimate of fiscal 1955 earnings are also included.

• Projection of earnings for an aircraft company, at best, is a hazardous undertaking. Imponderables are many and great which can easily alter the course of the most carefully conceived estimates. But in any investment appraisal such earnings forecast are a must. Investment values are established on the known existing expectations of both near-term and longer-term earnings. Price-earnings ratios are the commonly-accepted means of evaluating corporate earnings.

For example, a few years ago it was generally accepted investment practice to value aircraft earnings at four or five times their current rate. This meant that a company expected to earn about

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\$5.00 per share could be selling at from \$20 to \$25 per share. Price-earnings ratios for the aircraft group tend to change with the outlook for the industry. They are also importantly influenced by general market investment considerations.

Broadly speaking, the price-earnings ratio reflects the quality of a company's equity both in itself and in comparison with the rest of the industry's group, along with that of the broad listing of all industrial securities. As a general rule, a successful and promising company usually sells at a higher multiplier of current or average earnings than one that is less strong, less successful and less promising. To permit a comparative evaluation, the accompanying table sets forth the price-earnings ratios for the separate companies based on reported 1954 results and on estimated 1955 earnings.

• It is interesting to observe that of all the companies shown, Northrop has experienced the sharpest percentage drop in market price since the first of the year. It also has an evident low-quality rating, selling at 3.3 times earnings based on current 1955 fiscal results. While actual earnings for this year will undoubtedly be quite good, there is considerable doubt evident in the marketplace as to the company's prospects beyond this current period. Moreover, some observers, in reading S. E. C. reports of heavy liquidation of the company's stock by its directors and officers,

become discouraged in making or retaining investment commitments in Northrop.

On the other side of the scale, better-than-average market behavior thus far this year is indicated by Beech, North American, McDonnell, Curtiss-Wright, Bell and Cessna. Rumors of a merger with Lockheed may have been a factor in the Bell market pattern.

• During the recent twelve months, there has been a tendency to value aircraft earnings anywhere from seven to nine times. (By comparison, earnings in the broad industrial group are valued

at an average of around thirteen times.) As a rule, investors are vitally concerned with longer term outlooks and do not place too much emphasis on sporadic isolated earning conditions. For example, Martin's 1954 earnings of \$7.85 per share were valued far less (3.2 times) than the estimated 1955 earnings of \$4.00 per share (6.3 times). Last year, Martin was barely subject to an income tax impost, hence such earnings were largely discounted.

As sustained earnings for individual companies tend to firm up for the foreseeable future, price-earnings ratios are quick to change in reflecting this better outlook.

The investment history of the aircraft industry has been marked with frequent indications of hysteria as alternate waves of great optimism and fits of despair attempt to forecast coming events. As a consequence, there have been wide swings in the pendulum of market quotations for aircraft equities.

• Despite apprehensions that may exist at the moment, calm appraisal would lead to the inevitable conclusion that the United States is not yet ready to scuttle its Air arm and abandon its aircraft manufacturing industry. A strong national defense establishment will be maintained if only as an insurance policy.

For 1954, aircraft industry sales were indicated at \$8.2 billion. At the 1954 year-end, backlog for the industry was \$14.8 billion. Unobligated funds plus that made available in the 1956 budget can readily finance this backlog. Accordingly, as a group, the industry's sales and presumably earnings may readily be maintained this year and next at approximately the 1954 level.

As demonstrated by the wide disparities among the separate companies, no uniform industry pattern may be ex-



CONVAIR'S XC-99, experimental version of B-36 bomber, carried 212 Air Force ROTC cadets and crew members, believed to be largest group ever flown in a land-based plane, from Kelly AF Base, San Antonio, to Convair's Fort Worth, Tex. plant July 12.



FIRST CLASS OF 306 cadets for the new Air Force Academy was sworn in last month at ceremonies held at the temporary academy site at Lowry Field, Denver. Formal dedication was made by Air Force Secretary Harold E. Talbott and USAF chief of staff Gen. Nathan Twining. Permanent site for the academy will be at Colorado Springs and work will commence as soon as Congress and Air Force come to agreement on architectural details. The House ordered funds for the new construction held up the day after the Denver ceremony because of conflicting opinions over architecture. A new set of plans with less modernistic designs was submitted to the Senate late last month.

pected. Selectivity always pronounced in the aircraft industry is becoming increasingly important as a guide to profitable investment. Each company must be evaluated as to its outlook in having such "items" that both the military and commercial markets may require. Further, an ascertainment of the consequences of renegotiation, although difficult, must be attempted. This is an individual judgment factor and no ready-made formula is readily available.

By making these and related evaluations, particularly in periods of confusion such as exist today, the discerning can discover selective investment values in the aircraft group at attractive price levels. . . .

Convair Completes First SAM-SAC B-36

First B-36 bomber to be completely modernized under phase 2 of Strategic Air Command's specialized aircraft maintenance program (SAM-SAC) has been delivered to the Air Force by Convair-Ft. Worth.

It was the same B-36 that was first to complete phase 1 of the program in 1953. The entire SAC fleet of B-36s will be run through the Convair plant for overhaul, modification and modernization. Estimated time for completing the job: six years.

Under SAM-SAC, aircraft are returned to the original manufacturer for overhaul and modernization, rather than being sent to AF depots as in the past.

Air Associates Signs Merger Pact

Agreement providing for merger of Air Associates Inc. and Great American Industries Inc. has been announced by J. P. Ashman, Air Associates president. The pact is now subject to stockholders' approval. Great American, a Connecticut firm, manufactures cellular rubber products, intercom systems and specialized electrical devices.

Douglas May Build New Plant for DC-8

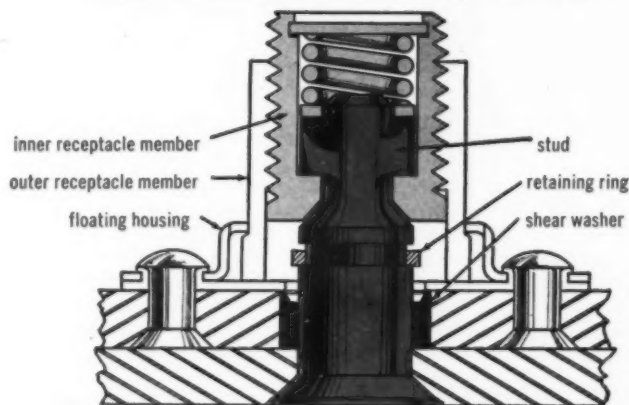
Douglas Aircraft Co.'s Santa Monica, Calif. plant, historically the site of its commercial airline transport production, may give way to a new facility for assembly of its DC-8 jet. New plant probably will be located at Los Angeles International Airport.

Douglas has begun preliminary talks with the L. A. Board of Airport Commissioners on such a location and is conducting engineering studies of a site on the west side of the airport.

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Delivery of First F-86K Marks Return of Fiat To Front Rank of European Plane Builders

By ANTHONY VANDYK

TURIN, ITALY—With the official handover last month of the first Italian-assembled North American F-86K all-weather fighter, the aviation division of the Fiat Company regains its long-held position as one of Europe's most important aircraft manufacturers. The F-86K program is only one of a series of developments which make Fiat's aviation future look extremely bright. Others include:

- A U. S. order for the Fiat G.91 Orpheus-powered lightweight fighter.
- A license agreement between Fiat and International General Electric for the production of J47 turbojets and parts (and complementary U. S. order for J47 parts and overhaul work.)
- A reasonable chance of a NATO order for the Fiat G.82 jet trainer which is now in limited production for the Italian Air Force.

Fiat (initials of *Fabbrica Italiana Automobili Torino*) is one of Europe's

industrial giants, comparable with General Motors or Britain's Vickers-Armstrongs. It has a labor force of more than 70,000 working in 15 production plants, most of which are in the Turin area. Fiat's best-known products are automobiles but the company also manufactures such diverse items as marine diesel engines, refrigerators, railroad coaches, electric generating sets and streetcars.

• The aviation activities of Fiat date back to 1908, nine years after the company was founded. It was in 1908 that the company's first airplane engine was built, the 50-hp SA8/75. During World War I Fiat produced 15,000 engines. Subsequently it developed vee-type, water-cooled engines and these Fiat engines were used in planes which won the Bleriot and Schneider trophies and broke international speed, distance and altitude records between the wars. During World War II a high proportion of Italian aircraft used Fiat aircooled engines.

It was not until the mid-1920s that Fiat had its own aircraft manufacturing division, the former Pomilio company

(subsequently renamed *Aeronautica Ansaldo*) which was founded in Turin in 1916. Fiat rapidly grew into one of Europe's leading aircraft manufacturers with such types as the C.R.42 and G.50 fighters, and the B.R.20 bomber.

At the end of World War II Fiat was in bad shape—its installations were heavily damaged and orders were lacking. The aviation activities of the company were reduced to the construction of a few three-engine transports and the conversion of C-47s for use by Italian airline LAI. Nevertheless, the Fiat management went ahead with its plans to make the company stage a comeback in the aviation field. With a prohibition on the Italian construction of combat aircraft it was natural that the main emphasis should be in the trainer field.

• Backed in part by small Italian Air Force orders, Fiat developed a whole series of trainer aircraft ranging from the G.46 primary trainer to the G.82 operational jet trainer. Over 300 G.49 advanced trainers were built for the Argentine and Italian Air Forces. After several lean years Fiat was given



FIRST FIAT-BUILT F-86K made its initial flight at Caselle airfield near Turin in May. Three more have now flown.

an Italian government contract to build the de Havilland vampire jet fighter under license and it produced 66 of the aircraft plus 150 wings for the British government.

It was planned that when the Vampire program was completed that Fiat should switch to the later de Havilland fighter, the Venom. This program did not go through, although Fiat did build 20 Venom wings.

While the Fiat aircraft plant was building de Havilland fighters, the engine factory embarked on a program to manufacture DH jet engines. It built parts for Goblins and complete Ghosts; the latter were exported to France's SNCASE company. Fiat manufactured a total of 80 Ghosts and is ready to resume production if required. Meanwhile, the company is overhauling Goblins for the Italian Air Force. Fiat has two modern jet engine test cells at Sanguone and soon will take two more into operation.

• **Fiat's first encounter** with the U. S. jet engine industry occurred when the company was licensed to build spare parts for the Allison J35-29. This program, started in 1953, has, for example resulted in Fiat having manufactured some half a million blades and 50,000 buckets for J35s.

At the peak of the J35 parts program, Fiat was building 547 items monthly. The latest development in Fiat's jet engine program is a U. S. contract to build General Electric J47 parts and to repair J47s. Production of the entire engine is also envisaged. In this way the Fiat company would eventually build the entire F86K-engine included. Fiat also has three engine projects of its own design; one is known to be in the 1,000-lb. thrust category.

Although Fiat no longer builds complete piston engines, it still is very active in the overhaul of this type of powerplant. It overhauls Rolls-Royce Merlins, P&W R2800s, R1830s and R985s and builds spare parts for the last two models. Fiat also manufactures propellers under Hamilton Standard license; it offers two models—the two-blade 5006 and the four-blade 5010.

• **In an exclusive interview here**, Professor Vittorio Valletta, president of the company, told AMERICAN AVIATION that he looks toward an expansion of Fiat's aviation activities, now representing about 10% of the firm's business. Valletta said he felt that Fiat, in association with French and German companies and backed by the U. S., could play a valuable role in building up western defense.

However, he said that Fiat is interested in the development of civil aircraft and hoped that one day his company could produce a low-price personal aircraft that would do for pri-



FINAL ASSEMBLY of the Fiat F-86K is performed in this specially-built shop at Caselle airfield where the aircraft are trucked from the production plant in Turin.

vate flying what the Fiat Topolino midget automobile had done for private motoring. Valletta also revealed that Fiat has been making some studies in the helicopter field.

Nevertheless, it is clear that for many years to come Fiat's main aviation activities will center around military aircraft, notably the F86K. Thanks to a relationship with North American Aviation which both partners say could not be bettered, the company is now well along with its initial contract for the

assembly of 50 of these all-weather fighters. By mid-July four of the aircraft should be flying. About a dozen Fiat-assembled F-86Ks should be in the air by the fall.

• **Meanwhile, the F86K assembly** contract has been supplemented by 126 more, making a total of 176. A valuable aid to Fiat came recently when the company was awarded a U. S. IRAN contract for the repair of USAF F-86Ds.

It is anticipated that about \$10,000 worth of work will be performed on



THE FIAT FAMILY OF TRAINERS comprises (top to bottom) the piston-engine G.46, G.49, and G.59 and the jet-powered G.80 (two aircraft) and G.82.

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ONE OF FIAT'S BRIGHTEST HOPES for the future is the G.91 lightweight fighter which is being built under U. S. sponsorship.

each of 79 aircraft. Fiat will not handle work on the engine, armament and fire control system of the aircraft under this contract. It is expected that work on this contract will start on August 1 with seven aircraft being handled each month.

Because of the great similarity between the F-86D and the F-86K, the F-86D IRAN contract will be of great value to Fiat in getting to know the aircraft and its components more intimately in preparation for the use of more Italian-built items in the F-86K program. Fiat is building ailerons, flaps, slats, canopies and drop tanks as spares for the initial 50 aircraft which are being assembled from North American-supplied components.

The next batch of 70 F-86Ks will use Italian-built horizontal and vertical stabilizers (manufactured under sub-contract by Macchi). It is expected that parts of the rear fuselages of the 70 aircraft will be Italian-built and that the entire rear fuselages of the follow-on order for 56 planes will be of Italian original.

F-86K SABRE ALL-WEATHER FIGHTER

DIMENSIONS

Span: 37' 1"
Length: 42' 4"
Height: 15'

WEIGHT

Gross take-off:
With ext. tanks20,347 lbs.
"Clean"18,500 lbs.

PERFORMANCE

Speed: More than 650 mph
Combat radius: Approx. 500 miles
Service Ceiling: Over 45,000 feet

POWER PLANT

General Electric J47 turbojet
Thrust: 5,600 lbs. plus afterburner

ARMAMENT

Four 20-mm. cannon

LANDING GEAR

Type: Tricycle, hydraulically retractable
Tread: 8' 3"

FIRE CONTROL SYSTEM

North American electrical

• Meanwhile, with each assembled F-86K, Fiat is taking on increasing detail work. For example, on the second and subsequent aircraft Fiat did all the wiring and hydraulic system installa-



KEY FIGURES in Fiat's license production of the North American F-86K are (left to right): Professor Vittorio Valletta, president of Fiat; J. H. Kindelberger, board chairman of North American Aviation; and General Umberto Tolino, Italy's head of aircraft production.

tion. The assembly program is running slightly ahead of schedule in some areas, particularly on wings. Fuselages too are ahead of the program with 25 instead of the scheduled 15 completed in June.

Shortage of engines has slowed down the F-86K program to some extent. The first eleven aircraft were scheduled to have the J47-33 engine but now it has been decided to substitute the J47-17B.

The F-86Ks are built at the Fiat

aircraft plant in Turin and are trucked to a specially-built shop at Caselle airport for final assembly. Nine aircraft were in the Caselle facility in mid-June. The aircraft are flight tested and accepted at Caselle. (Inspection is delegated to the Italian Air Force by the USAF). It has been found that these processes take only six weeks instead of the scheduled three months. This is proving to be an important factor in speeding up the F-86K program.

• Caselle is the Fiat flight test airfield and it is from here that the G.82 (the "G" means the designer is G. Gabrielli) trainer is going through its trials. This Nene-powered tandem-seat aircraft is rated very highly by all who have flown it. Two have been built and three more are under construction. Previously Fiat built four G.80s, a similar model with a DH Goblin powerplant.

Performance of the G.82 is impressive: maximum speed at 10,000 ft., 565 mph; stalling speed, 112 mph; rate of climb at sea level, 5,000 ft. per min.; service ceiling, 41,000 ft.; range, 715 miles; takeoff distance, 2,130 ft. The G.82 can carry eight rockets and two racks of bombs. Its maximum gross weight is 13,780 lbs. and its useful load is 4,080 lbs.

Fiat's third production jet aircraft is the G.91 fighter which is due to fly by the end of the year. Powered by a Bristol Orpheus, this lightweight model is specially designed for ground attack missions. The G.91 is sponsored by the U. S. and 3 prototypes and 27 production aircraft are being ordered.

With its important aviation program well in hand the Fiat company approaches the future with confidence. Politically the firm feels particularly secure since the Communist influence among workers in Italy has diminished considerably in the last year or so. Fiat has removed all workers of Communist allegiance from its aviation activities. Morale among the workers is high and at all levels within the company there is justifiable pride in the job that Fiat is doing for western defense. • • •



A FIAT COMMERCIAL TRANSPORT built after World War II was this G.212. The company hopes to revert to the production of civil aircraft.

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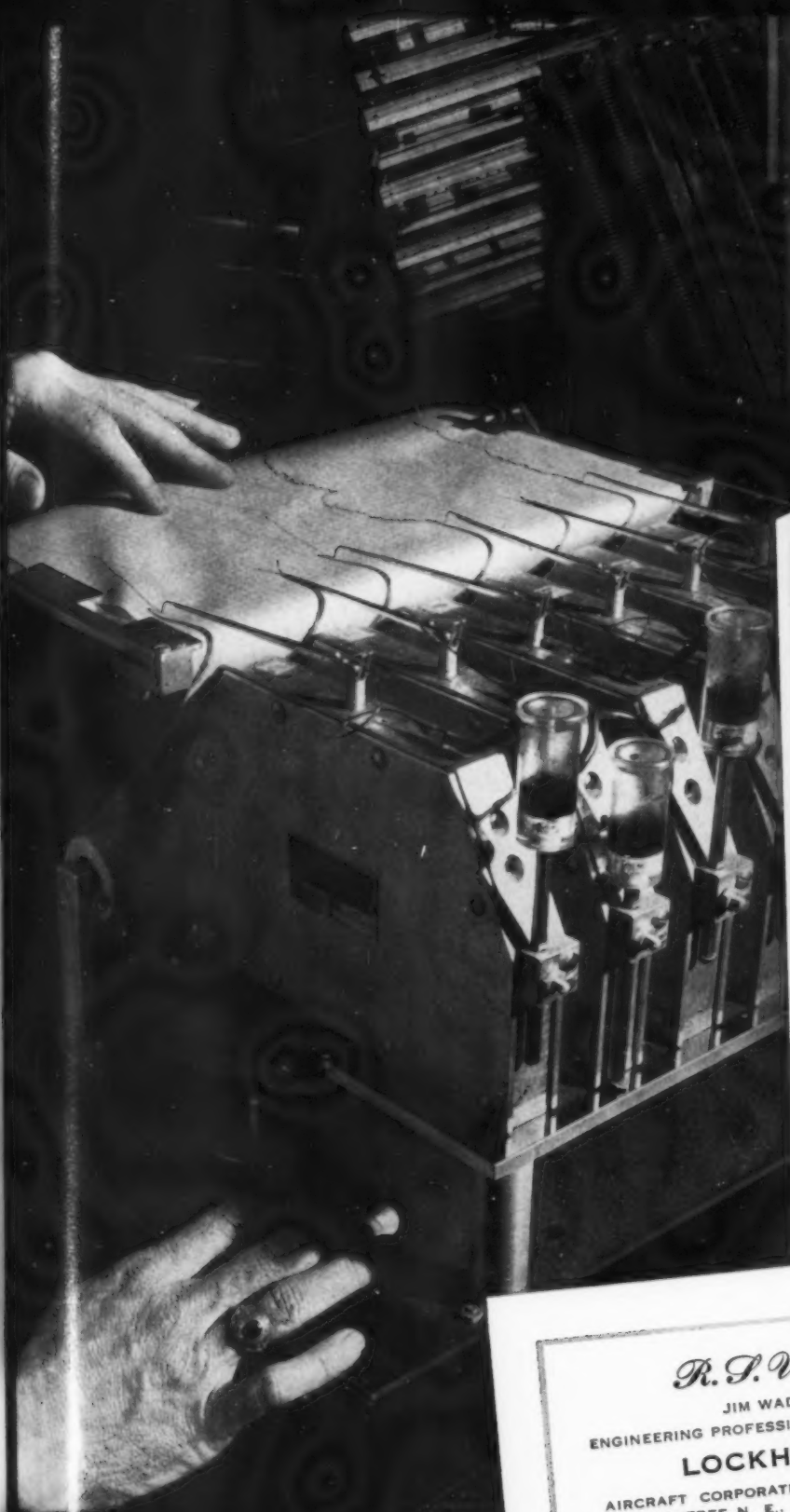
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Circle No. 100 on Reader Service Card.

HEAT EXCHANGER

Bush Manufacturing Co. has developed a heat exchanger with a patented transfer surface that may be used in air-to-air, liquid-to-air and liquid-to-liquid exchangers of all aluminum and stainless steel construction.

Known as Inner-Fin, the unit has longitudinal fins inside a tube in conjunction with standard outer fins, as shown here. A small inner tube is mechanically expanded, locking the longitudinal Inner-Fins in close contact with the inner wall of the outside tube. The greater surface area and smaller hydraulic radius provided by Inner-Fin permits more rapid heat transfer.

For any design requirements, the company says, incorporation of Inner-Fin makes possible a smaller, lighter heat exchanger.

Circle No. 101 on Reader Service Card.

SUBMINIATURE RELAY

Electro-Mechanical Specialties, Inc., has introduced a new subminiature two-pole, double-throw relay designed for jet aircraft, guided missiles and other airborne applications.

Hermetically sealed and filled with dry nitrogen, the unit is .656 in. in diameter, 1.5 in. long and weighs only one ounce. Manufactured in accordance with Spec. MIL-R-5757B, it is also said

to fill test requirements of Spec. MIL-R-6106A. The relay functions over a wide ambient range, -65C to +125C.

Circle No. 103 on Reader Service Card.

VIBRATION METER

A versatile vibration meter for use in engine analysis and with other rotating machinery has been announced by the Dubrow Electronic Development Co.

Frequency response is said to be $\pm 1\%$ from 10 to 1,000 cps and amplitude linearity is $\pm 1\%$ over most of the meter scale. Four velocity response pickups may be connected and their outputs sampled by a rotating switch. Three input filters provide frequency cut-off at 30, 70 or 110 cps. Equipment operates from a 95 to 125-volt source of 50 to 400 cps.

Circle No. 108 on Reader Service Card.

MINIATURE GENERATOR

A motor generator believed by its manufacturer to be the smallest available is being offered by John Oster Manufacturing Co. Called Type MG3013, it measures only one inch in its outside diameter and is 2.625" long, weighing 6.2 oz. Output, said to be unusually high in relation to its size, is 1.25 volts per 100 rpm when operated into a load of 100,000 ohms.

The generator has a 115 volt, 400-



cycle, two-phase drive motor with a stall torque of .15 oz.-in. It has a stainless steel housing with stainless steel ball bearings and shaft and class "H" insulation for high humidity and high temperature applications.

Circle No. 104 on Reader Service Card.

GAS GENERATOR

A small gas generator capable of producing about 850 jet horsepower has been announced by General Electric Co.'s aircraft gas turbine development department.

Weighing less than 3 1/2 lbs. and

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DALLAS-PHILADELPHIA \$60⁷⁰ SAN FRANCISCO-WASHINGTON \$98⁰⁰

LOS ANGELES-NEW YORK \$99⁰⁰ BOSTON-CHICAGO \$40⁰⁰

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America's Leading Airline

measuring only 4 in. long and 3 in. in diameter, the generator was developed for application to guided missile systems, but is also said to be ideal for many applications where a portable, reliable source of energy is required.

Using no moving parts, the generator converts liquid hydrogen peroxide



into a high pressure, high temperature gas stream of free oxygen and steam. The gas stream, or jet, as it is called, may then be directed against a turbine wheel and the rotative power thus generated may be used in the same manner as any turbine-generated power.

Circle No. 105 on Reader Service Card.

VIBRATION MOUNT

T. R. Finn & Company is making a new all-metal vibration mount for airborne electronic equipment which employs two convex springs and a circular coil spring for dampening and wire mesh pads for snubbing. The manufacturer says it meets Mil. Specs. C-172-B.

Trade-named the Finnflex, the mount has a resonant frequency below 10 cps and a magnification factor of less than $1\frac{1}{2}$ at resonance, with no double resonant peaks.

Circle No. 109 on Reader Service Card.

FIBERGLAS FABRIC

A knit elastic Fiberglas reinforcing fabric for use in plastic processing is now in full production in the plant of Duofold, Inc. Called Duofold Fabric H-3, it is said to be ideal for use in curved or cylindrical surface lamination, such as in aircraft parts.

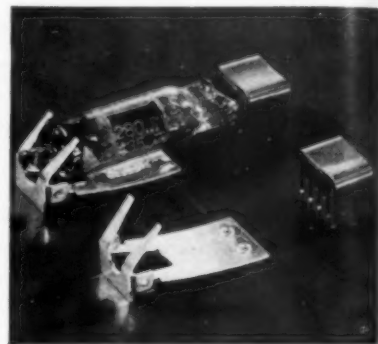
With this fabric, which is of tubular construction in sleeve form, the laminator can eliminate the bunching, tucking or pleating so often troublesome when woven fabrics are used for reinforcement, as they are in aeronautical, electronics and other fabrication fields. According to the manufacturer, the fab-

ric conforms itself to objects "as smoothly as skin over a bunched fist"—as shown here.

Circle No. 114 on Reader Service Card.

TUBE RETAINER

A retainer for subminiature "flat press" or "button" base tubes has been designed by P. R. Mallory & Co., Inc. Mounted to a chassis by rivets, the retainer prevents tube movement under shock and vibration conditions. The



manufacturer says the unit has been successfully tested to 2,000 cps at 20 g. The retainer is silver plated for corrosion resistance, and is made of beryllium copper for long life.

Circle No. 102 on Reader Service Card.

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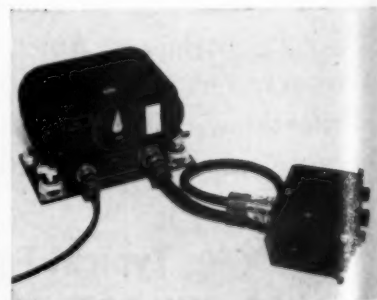
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Circle No. 12 on Reader Service Card.

RECORDER SET

Peirce Wire Recorder Corp., cooperating with Wright Air Development Center, has produced a recorder set intended primarily for making voice recordings in aircraft from microphones, radio sets and intercommunication systems. Both remote-controlled and local-controlled recording equipment are available.

Designated as RD-106, ANH-2, the



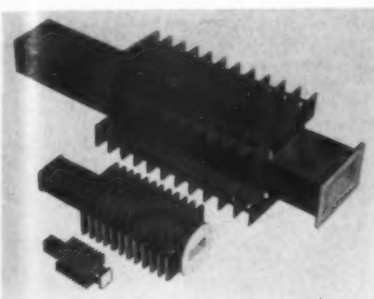
sound recorder itself weighs 6 lb., 4 oz. and occupies .22 cu. ft. of space. With magazine and mounting it weighs 8 lbs. 14 oz. Two Type 26A7GT tubes are used, one as an oscillator, the other as an amplifier. The recorder control unit C-1102/ANH-2 (remote) weighs two lbs. and is encased in black anodized aluminum.

Circle No. 106 on Reader Service Card.

WAVEGUIDE TERMINATIONS

Improved high power waveguide terminations capable of handling average power of 3,500 watts at "S" band and over 500 watts at "X" band are being produced by Narda Corp.

The waveguide is constructed of



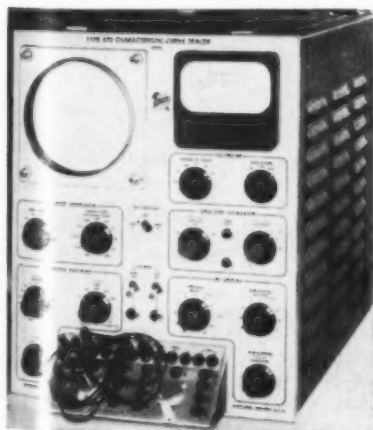
aluminum, with heat dissipating fins, and is designed for pressurization. Standard cover flanges are used. Seven models cover the frequency range of 1,120 to 1,700 mc and 2,600 to 18,000 mc. VSWR is approximately 1.05. Manufacturer says guides will stand test at double the rating without burnout.

Circle No. 107 on Reader Service Card.

CURVE TRACER

The Tektroni Type 570 characteristic-curve tracer displays plots of dynamic vacuum tube families of characteristics curves of current and voltage. A two-socket arrangement with front panel switching permits rapid comparisons between two tubes, and a patchcord connector system permits control of operating conditions.

An eleven-position switch on the plate-sweep generator selects the series-



load plate resistance ranging from 1M to 1 megohm. An eight-position peak voltage switch selects plate voltages from 5 to 300 volts. Heater voltages from 1.25 to 117 volts ac are available, with provision for $\pm 20\%$ voltage variation. Positive dc voltage from 20 to 300 volts



There is an important place for you at CONVAIR-FORT WORTH if you have the qualifications and desire to perform vitally essential work in these technical areas.

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Performance of Aircraft and Missiles—
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Flight Test Data Analysis

AEROPHYSICS

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Analysis of Fire Control
and Electronic Countermeasure Systems
Systems Engineering—including Navigation,
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and Development—Preliminary Design—
Aerodynamics of Steady and Non Steady Flow—
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is available for heater operation. A built-in voltmeter is supplied.

Circle No. 110 on Reader Service Card.

HIGH-OUTPUT INVERTER

A new aircraft inverter weighing 41 lbs. and rated for a maximum output of 2,250 va at 35,000 ft. has been developed by Leland Electric Co., a division of American Machine & Foundry Co.

Designated Model SE-24-1, the inverter is standard equipment on the



Martin B-61 Matador, where it is used to power servomechanisms that require a high signal-to-noise ratio power source.

The unit is 13¼ in. long, 9¼ in. high and 7½ in. wide. It is self-venti-

lated, but provision for blast cooling permits raising the output from 1,500 va to the maximum of 2,250.

Circle No. 112 on Reader Service Card.

SERVOMECHANISM KIT

Servomechanisms, Inc., has developed a kit containing an assortment of mechanical development apparatus for use in the laboratory for electromechan-



ical development and control simulation.

Trade-named the MechaKit, it is made of plastic and is available in three sizes. When not in use, parts can be stored in marked wells in removable

plastic inserts, designed to protect them from dirt and dust.

Circle No. 113 on Reader Service Card.

VHF TRANSMITTER-RECEIVER

National Aeronautical Corp. has developed a 27-channel VHF transmitter and receiver, Model VC-27, that



can accommodate all 25 crystals now used for airport and en route traffic control and communications. It also provides for two additional crystals for special communications purposes such as flight test, instruction, radar control, etc.

The VC-27 is a development of the VC-12 Simplexer made by the same company. It can accommodate every

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July 13, 1955.

frequency used between 118.1 and 122.8 mc (24 crystals), plus 126.7 for en route INSAC communications and two others. The entire unit measures 3 in. high, 6¼ in. wide and 6⅞ in. deep, so that it can be mounted in the standard glove compartment of most business and private aircraft.

Circle No. 117 on Reader Service Card.

ANCHOR NUT

A 2-56 thread size anchor nut is now available in the Kaylock line, made by the Kaylock Division of the Kaynar Co. Said to be especially useful for electronics and guided missiles applications, because of its tiny dimensions, the nut is made possible because of its unique



design. Upper threads are made elliptical and highly resilient, eliminating the necessity of an auxiliary locking device.

According to the manufacturer, with the Kaylock nut there is no danger of fungi accumulating in terminals in electronics applications. Because it is all metal, it can be used in temperatures ranging up to 550 F.

Circle No. 115 on Reader Service Card.

SUBMINIATURE IF AMPLIFIERS

A new series of IF amplifiers for airborne radar systems and broadband receivers is available from Maxson Instruments Division of W. L. Maxson Corp. Featuring gain of over 100db and bandwidth of over 12mc at frequencies of 30, 60, and 90mc, the design provides complete shielding and absence of regeneration even with the covers removed, according to the manufacturer.

Containing tubes rated for 5,000-hour life, the amplifiers have circuits feeding an infinite impedance detector and a cathode follower output stage. Bias control regulates the gain over a 40db range. The unit measures 1x2x12 in.

Circle No. 120 on Reader Service Card.

D-C POWER RECTIFIERS

McColpin-Christie Corp. has announced improved design characteristics in its line of Stavolt D-C power rectifiers. According to the manufacturer, improved circuitry enables the rectifiers to achieve voltage regulation accuracy of $\pm 0.5\%$, dc ripple of 1% and a re-



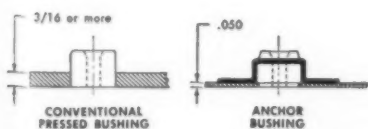
covery time of 0.1 sec., without any increase in size, weight or cost.

Eleven standard 28-volt production models with capacities up to 1,500 amperes are available, in either mobile or stationary types.

Circle No. 116 on Reader Service Card.

SAVE TOOLING TIME AND MATERIALS WITH ANCHOR BUSHING DRILL TEMPLATES

When you replace your drill jigs or fixtures with Anchor Bushing Drill Templates, you'll save toolmaking time and material.



Your toolmakers can devote their time to more urgent jobs while less skilled workers can be used to make accurate drill tooling with the Anchor Bushing method.

Thin sheet metal or plastic material is prepared flat, formed or curved, to match the contours of the work. Using sheet metal, Anchor Bushings are pressed into punched holes and rivet or spotweld attached. With laminated plastics, Anchor Bushings are embedded into the plastic before curing, or riveted onto the plastic after curing.

The methods of making low cost accurate Anchor Bushing drill tooling are fully described in the Anchor Bushing Catalog. Write for it.



Standard Anchor Bushings, REGULAR and CORNER, for sheet metal drill templates.



NUTPLATE Anchor Bushing with three coordinated holes for nutplates — used on sheet metal drill templates.



Standard LONG PILOT, TRIANGLE and DIAMOND Anchor Bushings for laminate plastic drill templates.



Drilling holes in instrument panel at Douglas Aircraft Company, Santa Monica.



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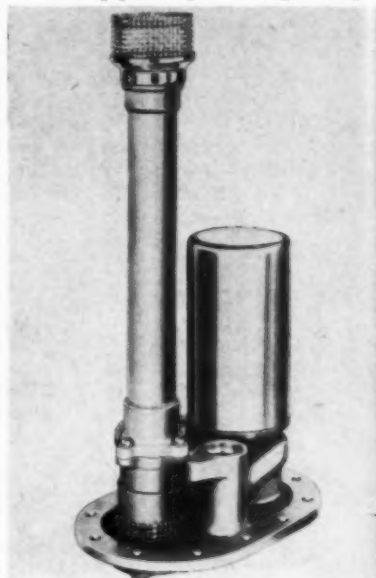
B & H INSTRUMENT Co., Inc.
1009 Norwood • Fort Worth 7, Texas

Circle No. 15 on Reader Service Card.

FUEL BOOSTER PUMP

A submerged fuel booster pump for use on small gas turbine engine aircraft the Lear-Romec Model RG-11100 2 has a weighted valve that causes fuel to enter the pump through the extreme end of the standpipe during inverted flight.

Standpipe is special length to per-



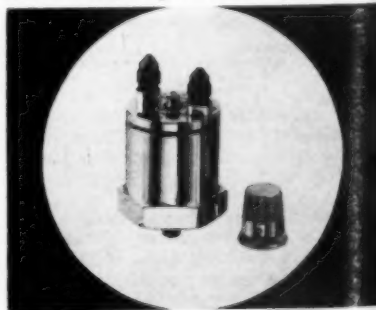
mit pumping to a low fuel level in the tank. Fuel is pumped through the lower end of standpipe for normal operation.

Rated capacity is 3,000 pph, 16 psi minimum, which is obtained in upright or inverted flight.

Circle No. 111 on Reader Service Card.

ACCELEROMETER

Endevco Corp. has announced a high temperature accelerometer designed to meet the requirements of rocket engines, internal combustion engines and many industrial processes. Designated Model 2205, it provides a dynamic ac-



celeration range from 0 to 1,000 g and allows high temperature operation up to 2,200 F.

The instrument, constructed of stainless steel, weighs 5 oz. It utilizes a special piezo-electric ceramic crystal which self-generates an output proportional to acceleration.

Circle No. 118 on Reader Service Card.

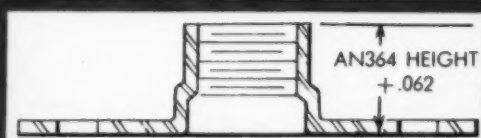
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AN364 THREAD HEIGHT
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Series 12600 self locking, sheet metal nuts are designed as the *ultimate answer for light weight* AN362F-AN366F series anchor nuts.

The thread relief design eliminates the need for the first shim, thereby making the *lightest assembly possible*.



COMING SOON. Other styles and types in this basic design.

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These high strength, low height anchor nuts are fabricated from A.I.S.I. 4130 aircraft quality steel. They exceed requirements of Spec. AN-N-5 and AN-N-10 and are designed to meet requirements of MIL-N-25027 (ASG).

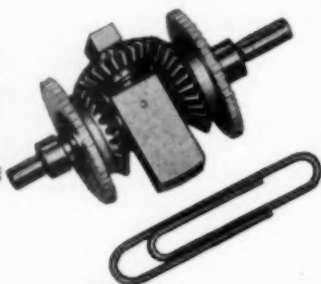
Self locking, sheet metal nuts in Series 12600 withstand temperatures up to 550° F and employ the *triple lock* locking method.

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People

MANUFACTURING

Ralph J. Eschborn named chief engineer of Jack & Heintz, Inc.



Eschborn

George W. Maltratt, gen. mgr. of Rheem Products Div., elected a vice president of Rheem Mfg. Co.

Kenneth R. Herman made president, Dr. N. E. Edlefsen vp-engineering, of Vickers Inc.

David H. Robinson appointed mgr. commercial aviation sales, Engineering Products Div., Radio Corp. of America.

George S. Cooke, Jr., named head of Air Force Requirements Office at Martin.

K. Robert Hahn appointed division contracts mgr., Lear, Inc.

Robert P. Gira made sales mgr. for Topp Industries, Inc.

Ward D. Davis joined military contracts and commercial sales departments of Doman Helicopters, Inc.

John O. Wagner joined Defense Products Div. of The M. W. Kellogg Co.

J. Earl Steinbauer appointed asst. to the gen. mgr. of Fairchild Aircraft Div.; Robert W. Martz succeeds him as mgr. of plant operations.

Leonard A. Mayberry named to newly created post of engineering mgr. of Hoffman Laboratories, Inc.

Chance Vought made director of sales of Aircraft Div., White Industries, Inc.

Ray Morris named senior test pilot of newly formed Electro-Mechanical Flight Test Section, North American Aviation, Inc.

Lt. Col. Leonard J. Hutton appointed Air Force plant representative at Convair-Ft. Worth.

Roy Evans becomes chief designer of A. V. Roe & Co., Ltd.

Earle M. Jorgensen appointed to the exec. committee of Northrop Aircraft, Inc.

V. J. Hill, Jr., appointed to head Walter Kidde & Company, Inc.'s new Aviation Division.

George Robinson made sales engineer of Weber Aircraft Corp.

John H. Flaskamper advanced to vp-sales of American Bosch Div., American Bosch Arms Corp.

Dr. Lloyd T. DeVore named gen. mgr. of Electronics Div., of Stewart-Warner Corp.

D. R. Tashjian appointed mgr. of engineering for Westinghouse Electric Corp.'s electronics division, Baltimore.

AIRLINES

Martin W. Taylor appointed asst. maintenance supt. of Pan American World Airways' customer service base, Brownsville, Tex. Paul Nelson, PAA district traffic and sales mgr. at Barcelona, Venezuela, appointed to same post in Maracaibo; Richard Blom succeeds Nelson at Barcelona. L. R. Ulrich named supt. of meteorology for Pacific-Alaska division.

Henry M. Amlin named director of

labor relations for Braniff International Airways; Stephen J. Facsko named asst. cargo mgr. in Dallas area.

Frank Rance made mgr. of Western Air Lines' new station facilities at Sioux Falls, S. D.

Burton E. Bauder appointed director of the compensation and benefit division of American Airlines.

Milton L. Patterson elected vice president of Airwork Atlantic, Ltd.

Harold M. Bixby retired from vice-presidency of Pan American World Airways but continues as director and exec. committee member.

Raymond H. Hering appointed gen. asst. to the exec. vp, American Society of Travel Agents.

T. M. Reilly made director of budgets and research for Scandinavian Airlines System.

Marc Stainier elected vp-operations, Anselme Vernieuwe exec. vp, Valentin Pacco vp-traffic and sales of SABENA Belgian World Airlines; D. A.

Le Roy du Vivier appointed North American manager.

Richard Wheatland named traffic mgr. of New York Airways, Inc.

William M. Kerrigan promoted to asst. to the president and director of public relations-publicity, Bonanza Air Lines, Inc.

Robert B. Mingo became director of the Military Bureau of the Air Transport Association.

Charles L. Gallo elected president of the Air Freight Forwarders' Assn.

W. E. Huskins named mgr. of operations, Orient region, Northwest Airlines; Ford Eastman heads new public relations office in Washington, D. C.

MILITARY-GOVERNMENT

Capt. Fred D. Pfotenbauer to become Bureau of Aeronautics representative at El Segundo division of Douglas Aircraft Co.

Charles A. "Chuck" Lowen moved from consultant to Civil Aeronautics Administrator to position of deputy CAA administrator.

Maj. Gen. Albert Boyd, commander Wright Air Development Center, assigned to post of deputy commander for weapons systems, Air Research and Development Command. Brig. Gen. Howell M. Estes, Jr., now director of weapon systems operations at WADC, appointed asst. to Boyd.

Lionel M. Mantell, former chief of contract branch, Eastern Air Procurement District, USAF, joined Lehigh & Lehigh, attorneys, New York City.

Milton Greenberg appointed director of Geophysics Research Directorate of the Air Force Cambridge Research Center.

James E. Lehrke promoted to asst. to director of supply at headquarters, Air Materiel Command.

Lt. Col. George Schenkein, senior USAF representative in the Defense Department's Security Review Office, Pentagon, assigned to Armed Forces Staff College, Norfolk, Va.

Paul C. "Mickey" Ledrick, Deputy Asst. Postmaster General, Bureau of Transportation, resigned effective July 2.



Stainier

MR. ENGINEER...

how do you measure yourself?

You may have all the attributes of a successful engineer; training, education, initiative, etc., but is your engineering knowledge and skill being fully utilized? If your career advancement has not measured up to your expectations, possibly *lack of opportunity* is the reason.

Opportunity is a nebulous term, spelled out below is the McDonnell definition of this word:

DESIRABLE SALARY STRUCTURE

McDonnell's salary structure is comparable to the best in the industry.

VARIETY OF ASSIGNMENT

Our 3 engineering divisions—Airplane, Helicopter and Missile are now at work on 12 different development contracts. This multiple project operation allows us greater flexibility in assigning and re-assigning our engineers.

INDIVIDUAL RECOGNITION

McDonnell engineers are reviewed every three months by their supervisors and raises and promotions are granted on a strict merit basis with demonstrated ability the primary consideration.

SELF IMPROVEMENT

In addition to a complete in-plant training program, McDonnell engineers are encouraged to attend one of our two local universities for advanced engineering training.

STABILITY

At McDonnell we have never had an engineering layoff in the company's sixteen year history. Our engineering staff has grown steadily, even during the so-called "lean years" of defense work—1945-50.

MR. ENGINEER

If you agree with this definition of *opportunity* and would like more information about our company and our community, complete the blank below and mail to:

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Address _____
Phone _____
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Position Desired _____

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FIFTY THOUSAND TRANSATLANTIC CROSSINGS!

*Champion Spark Plugs Help
Pan American World Airways Maintain
A Winged Bridge Between New World and Old!*

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Of course Champion Spark Plugs are in use by Pan American, just as they serve the vast majority of scheduled airlines in this country and abroad. This long established international preference for Champions should guide the purchase of spark plugs by everyone responsible for the safety and efficiency of any aircraft, anywhere.

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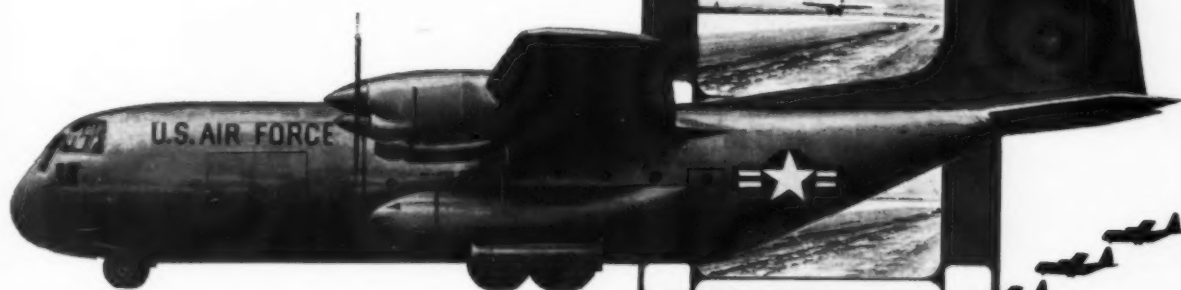
The World Flies on

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FOR TAC
COMBAT CARGO
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HERCULES



Every job assigned to the Tactical Air Command requires one special talent: mobility... more "get-up-and-go."

TAC's new combat cargo plane, the C-130 Hercules, represents a new era in mobility. It's the first military transport with turbo-prop power. It's fast—faster than many commercial transports. It's eager—able to take off and land in less than 300 yards. Designed for rugged and robust work, it can use even improvised runways.

First assignment for Hercules: providing a mobile airlift at a moment's notice for TAC's 18th Air Force. Hercules will fly cargo and men *farther, faster and at less cost* than any other combat transport. The job of quick resupply is a good example (and just one of Hercules' dozen or more prime missions). After dropping 64 paratroops, or landing supplies or 90 infantrymen in combat zones, the Hercules can hustle back to advance base, load up with some 20 tons of food, ammunition, medical supplies, and deliver them where front-line fighters need them. Then, converting in a matter of minutes to a hospital plane, a single Hercules can evacuate up to 74 litter patients.

This takes get-up-and-go. TAC's Hercules has it. Designed by Lockheed, the Hercules is now in production at Government Aircraft Plant No. 6 in Marietta, Ga., first U. S. turbo-prop production line for transports.



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Maintenance Bulletin Board

Douglas Noise Reduction Treatment Makes Piston Transports Quieter

Quieter airplanes (piston variety) are in store for air travelers through a noise level reduction program worked out by Douglas Aircraft Co. for application to its DC-6B and DC-7 aircraft.

The treatment whittles cabin noise of a DC-7 down to approximately that of a DC-6B. Same treatment in a DC-6B adds substantially to its present margin of comfort.

• The optional installation, which entails approximately 300 to 600 pounds of added weight, depending upon the extent of treatment desired, has been ordered by several airlines on new equipment coming up. United Air Lines also has ordered the retroactive modification of its present DC-6B fleet with the work scheduled to start at its San Francisco base in October.

Following are the changes UAL has scheduled for its present DC-6Bs: Install Anacoustic windows (triple pane) throughout the cabin.

Reinforce and damp partitions at Stations 217 and 260.

Reinforce aft lounge underfloor structure.

Install heavy insulation blankets in

wainscoat area and between windows.

Install moderately heavy blankets in main cabin, in the forward compartment and in the lavatory area.

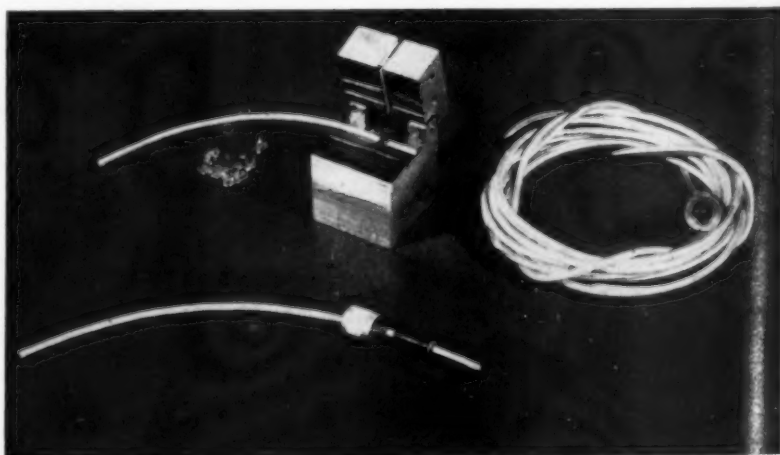
Install Acoustimat in light trough and pressure dome.

• Acoustimat is the Douglas term for cohesive aluminum strips developed by Matt Miller, company acoustical engineer, as a means of muffling the transmission of noises picked up from the outside. Anacoustic also is another Miller term to describe the specially designed, six-pound, triple pane cabin windows.

Final touch in the campaign against cabin noise is supplied by the so-called "slip-stick" partitions which are designed for mounting in rubber to insulate lavatory bulkheads, coat-rooms and buffets from vibration and noises coming from the propellers.

UAL's program involves about 530 pounds of added weight and the material cost is estimated at about \$12,000 per aircraft. UAL is scheduling its program in conformity with overhaul schedules to hold down the time the planes will be out of service for the work.

Martin Develops Wire Stripping Tool



Newest tool development at Glenn L. Martin Co. is a wire stripper that handles special wiring having strands that are too fine for commercial strippers.

The Martin device is a small hinged guillotine having a recess into which the wire is placed. The stripping blade is

set to cut Teflon insulation close to the wire without introducing nicks or other damage.

When the tool is closed, the wire is rotated and pulled through to strip the ends and leave the gossamer strands intact ready for use.

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West Coast Talk . . . By Fred S. Hunter

- Some airlines may wait for Allison turboprops.
- Fink may be in line for Ryan presidency.
- North American stock split rumored.

SOME airlines—in no great hurry for replacement aircraft—may wait for Allison's advanced turbo-prop engine to become available before signing on the dotted line for Lockheed Electras. This won't take too long; a year or two, perhaps, after the starter 501-D10s, which would make them available, probably, for Lockheed's 1960 delivery positions.

This advanced engine is a commercial version of the military D8 and will have more power, being rated at 4,050 eshp as compared to the D10's 3,750. It also will be tailored to meet airline requirements and thus include installation features which Lockheed and the carriers will recommend for commercial-type, as contrasted with military operation. The first engine, the D10, by necessity, is identical to its military prototype, the T56A1.



Hunter

This is either confidence or courage. Ivar Shogrun, project engineer on the DC-8, will deliver a paper on the economics of the Douglas jet transport at the national turbine-powered air transportation meeting in Seattle. Right in the enemy's territory.

Hamilton Standard landed the highly-sought order for propellers for TWA's Model 1649 Super Constellations . . . Several investment services have mentioned North American Aviation as a possible candidate for a stock split . . . Japan Air Lines is expected to continue using Transocean Air Lines pilots under contract for about another year and then start phasing in Japanese nationals . . . Both Boeing and Douglas are employing the mechanical blockage principle in their reverse thrust developments for their respective jet transports.

San Diego reports hint Frank Fink may be in line to step into the presidency at Ryan Aeronautical if

T. Claude Ryan should decide to share the administrative load and function as chairman of the board . . . All orders by European carriers for Douglas DC-7Cs are for combination planes . . . San Francisco Airport missed a bet by not installing escalators in its fancy new terminal, instead of ramps, which passengers have to trudge up and then down going to and from planes.

Hiller Helicopters may introduce a new touch in CAA type certification with its HJ-1 ramjet helicopter. It proposes its evaluation in combined fashion as a single and as a multi-engine helicopter. This is to obtain acceptance of the power-off autorotational landing characteristics, which are considered marginal for a single-engine helicopter. HJ-1 has two small ramjets at the rotor tips and rate of descent to keep the rotor speed up with power off is quite high because of the engine drag.

Boeing's two experimental turboprop C-97s will undergo further Air Force tests at Edwards Air Force Base before they are delivered to MATS at Kelly in Texas . . . Price tag on the 10 mph faster Convair 340B is \$720,000, up from \$685,000 . . . A TF version of the F-104 is reported in the mill at Lockheed . . . DC-8 starter system embodies one combustion starter and three pneumatic starters.

Not new, but true. Operations officer of a CAP squadron was lecturing a group of pilots new to California. "Remember," he said, "when approaching an airport to land, check first the identification letters on the hangars, then look for the tower and watch for any light signals that may be visible. If no activity there, look carefully for bulldozers . . . they may be subdividing the field."

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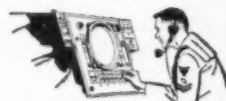
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The latest country to plan a "bite" on departing air passengers is Italy, which has drafted legislation to levy an "air embarkation tax" of \$1.30 per head. Undoubtedly this system of milking the passenger is a financial success.

To date the British government has netted a revenue of well over \$2 million from the 70¢ charge levied on passengers departing on international flights from government-owned airports in the United Kingdom. This "service charge," as it is called, has been in force since May 1, 1952, and in Britain's last fiscal year, through March 31, 1955, it produced a net revenue of \$747,600.

The financial success of the "service charge" in Britain spurred the French authorities into introducing an even more pernicious system last year. Under the French scheme passengers leaving Paris on all flights to points beyond France must pay a charge which varies according to the distance travelled. The minimum is 85¢ and the maximum, for flights to places outside Europe, is \$3.50.

The system of making passengers buy their way into and out of foreign countries is clearly spreading. Disembarkation or embarkation taxes (disguised under various nomenclatures) are currently levied as follows:

Bahamas (\$1.70); Bermuda (\$2.80); Burma (40¢); Costa Rica (varies); Cuba (varies); Dakar, French West Africa (30¢); Ecuador (\$2); Ethiopia (charges levied); France (\$1.30); Haiti (\$2 except for tourist card holders); Indonesia (disembarkation tax is returnable if stay is less than 30 days); Jamaica (\$1.40); Philippines (\$8); Puerto Rico (30¢ for disembarking passengers from points outside Puerto Rico); Salvador (\$1); Saudi Arabia (about \$1.15); Surinam (\$2.65); Syria (30¢); Thailand (temporary residence permit and exit permit taxes levied); United Kingdom (see above); Uruguay (65¢); and Venezuela (\$3 entry tax and \$1 exit tax levied).

This dreary list does not include taxes on tickets which masquerade under such fancy names as "aeronautical tax," "pension tax," "sales tax" and—last but not least—"transportation tax." U. S. transportation tax, incidentally, is still charged on flights to points in the Caribbean area but not to the mainland of South America. Thus for the passenger traveling from Miami to Curacao, a Caribbean island just off the coast of South America, it is slightly cheaper to buy a tax-free ticket to Caracas, the next stop (and not use the Curacao-Caracas portion) than to buy a taxed-ticket to Curacao!

Transatlantic Cargo Rates Change Aug. 15

A number of changes will take place in the structure of International Air Transport Association members' transatlantic cargo rates on August 15. There will be a new and simplified system of commodity rating but the existing basic rate for general merchandise will remain unchanged at its present level of \$2.42 per kilogram (\$1.10 per lb.) for the basic sector, New York-London.

The present 25% discount for general shipments over 45 kilograms (100 lbs.) will also be continued but the existing additional 200 kilogram (440 lbs.) breakpoint will be dropped; instead, attractive rate reductions to encourage volume cargo have been built into the new commodity rates themselves.

Under the new system commodity rating will be greatly simplified with only 48 "descriptions" of commodity rates instead of the present several thousand rates. With few exceptions all the new commodity rates will be "and between" rates which will apply equally eastbound and westbound. Under the present system many rates are directional. Existing variations of charges for the same commodities based on the value of shipments will also be discontinued—all commodities of the same description will move at the same rate, regardless of valuation.

The further complication of special breakpoints at 100, 250, 500 and 1,000 kilograms which have been inserted in some but not all of the existing specific commodity rates will also be eliminated.

Under the new system special commodity rates will begin at the 45 kilograms breakpoint. From there on all shipments of any description, regardless of size, moving between the same in-

dividual points, will pay the same rate; shipment of 1,006 kilograms, for example, will therefore move at the same rate as one of 46 kilograms between the same points.

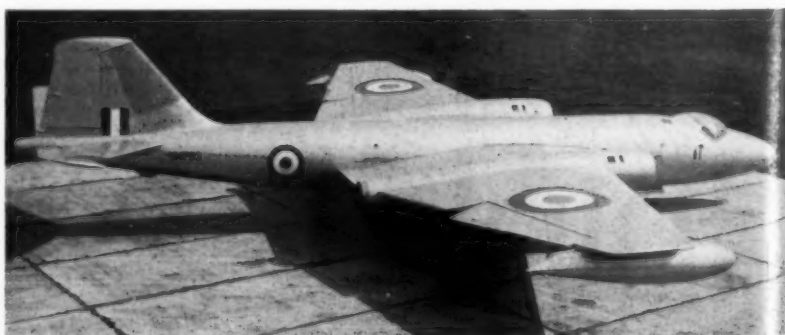
• The new commodity rates work out to levels substantially below the general merchandise rate for shipments over 45 kilograms. Between New York and London, for instance, this rate is, and will remain, \$1.82 per kilogram. The highest of the new commodity rates for shipments between these two points is \$1.32 per kilogram and the range goes as low as 88 cents per kilogram.

Transport Briefs

Trans-Canada Air Lines will start Viscount service between Montreal and New York August 8. Australian National Airways has bought a Bristol 171 helicopter . . . Britavia, parent company of Silver City Airways, is buying three Breguet 763 Deux Ponts from Air France for use on an all-cargo operation between Britain and Australia . . . REAL-Aerovias Brasil has changed its order from three DC-6Bs to three DC-7Cs for delivery in 1957; it has also ordered two Convair 340Bs and is buying kits to convert its present 340s to 340B standards.

Manufacturing Briefs

Hurel Dubois has received an order from the French National Geographic Institute for four survey versions of the HD 32 transport . . . The SNCASE Caravelle completed the first phase of its test program by logging 22 hours in the air in 22 days . . . Two new Fouga twin-engine aircraft, the 171 and 172, will be used to test France's new medium-power jets, the Turbomeca Gabizo, Hispano-Suiza R.800 and SNECMA R.105 Vesta . . . SNCASO Vautours have logged over 400 flight hours to date . . . Short Bros. & Harland is working on a 70,000-lb. "flying boxcar" project powered by two Bristol proteus turboprops . . . Canadair has received a \$10 million contract to supply 34 Orenda 14-powered Sabre 6 fighters to the South African Air Force for delivery between April and July 1956.



LATEST ENGLISH ELECTRIC CANBERRA, the PR 9 reconnaissance version, made its first flight on July 8. It has a greater span (68 instead of 64 feet) and more powerful Rolls-Royce Avon engines than earlier models, giving increased range and operating altitude.



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Now in production both at North American's Los Angeles Plant and at the Fiat Works in Italy, the F-86K SABRE JET is slated for early service...will soon form a miles-high wall against aggression.

The "K" is another example of the kind of research and development that keeps North American foremost in aircraft, rocket engines, guided missiles, electronics and peaceful applications of atomic energy.

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ENGINEERING AHEAD FOR A BETTER TOMORROW

NORTH AMERICAN AVIATION, INC.

Cessna's 4-Engine Business Plane To Be Ready by End of Year



Cessna Aircraft Co.'s new four-engine Model 620 business plane will be ready for first flight about the end of this year, the company now estimates.

Cessna has received engines—Continental GS0526-As—for the prototype and they are ready for CAA certification. The new six-cylinder Continentals will provide maximum takeoff power of 320 hp each, METO power of 290 hp.

The company reports it has received offers of orders, but that no firm commitments will be made until the prototype has been flown "and we know its performance meets our standards."

- **Price tag** for the business plane, which can be converted from a nine-place passenger carrier to an all-cargo version in a matter of minutes, will be about \$300,000 with adequate instrumentation.

An AiResearch gas turbine, developed from a military version especially for the 620, makes the new plane self-sufficient away from airports. The turbine not only provides electric power while engines are not running, but also serves to pressurize, heat, cool and ventilate the cabin.

The turbine is installed aft of the passenger cabin and is isolated by a fire-resistant plastic bulkhead to cut the noise level.

- **The Continental engines** were developed along an airline basis, with stiffer crankshaft, more dynamic dampers, more rigid engine mounts and accessories on top of the engine instead of against the firewall.

Ralph Harmon, project engineer, says the new engine setup gives better accessibility than that on radials.

The engines will turn three-bladed Hartzell constant speed, full-feathering props.

Loading is provided by a stair-door behind the port wing.

The 620 has hydraulic tricycle landing gear and electric props.

Harman says stress levels due to pressurization load have been held to a maximum of 13,000 psi.

- **Here are dimensions** of the 620: Wheel base, 12.7 ft.; tread, 18.3 ft.; aspect ratio, 9; wing loading, 40.1

lbs./sq. ft.; power loading, 10.6 lbs./sq. ft.; span, 55 ft.; length, 41.55 ft.; height, 16.4 ft.; fuselage width, 74 in.; fuselage height 84 in.

Estimated performance specs.:

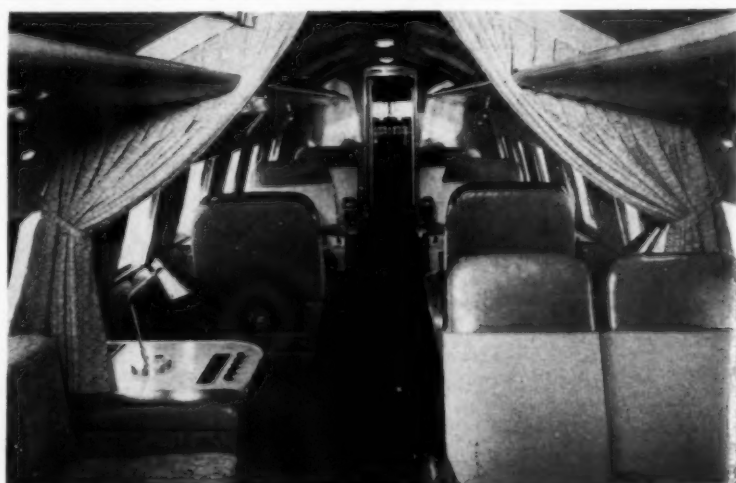
Takeoff gross weight, 13,650 lbs.; landing gross, 13,000 lbs.; maximum speed at 15,000 ft., 269 mph; cruise speed at 70% power at 18,000 ft., 235 mph; maximum rate of climb at sea level, 1,600 fpm; takeoff distance over 50 ft. obstacle (sea level), 1,800 ft.; landing distance over 50 ft. obstacle (sea level), 2,250 ft.; range (maximum), 1,700 miles endurance 65% power, 7¼ hrs.; four-engine service ceiling at 13,650 lbs., 27,500 ft.; three-engine service ceiling at 13,650 lbs., 22,500 ft.

Dallas Firm to Lease Business Aircraft

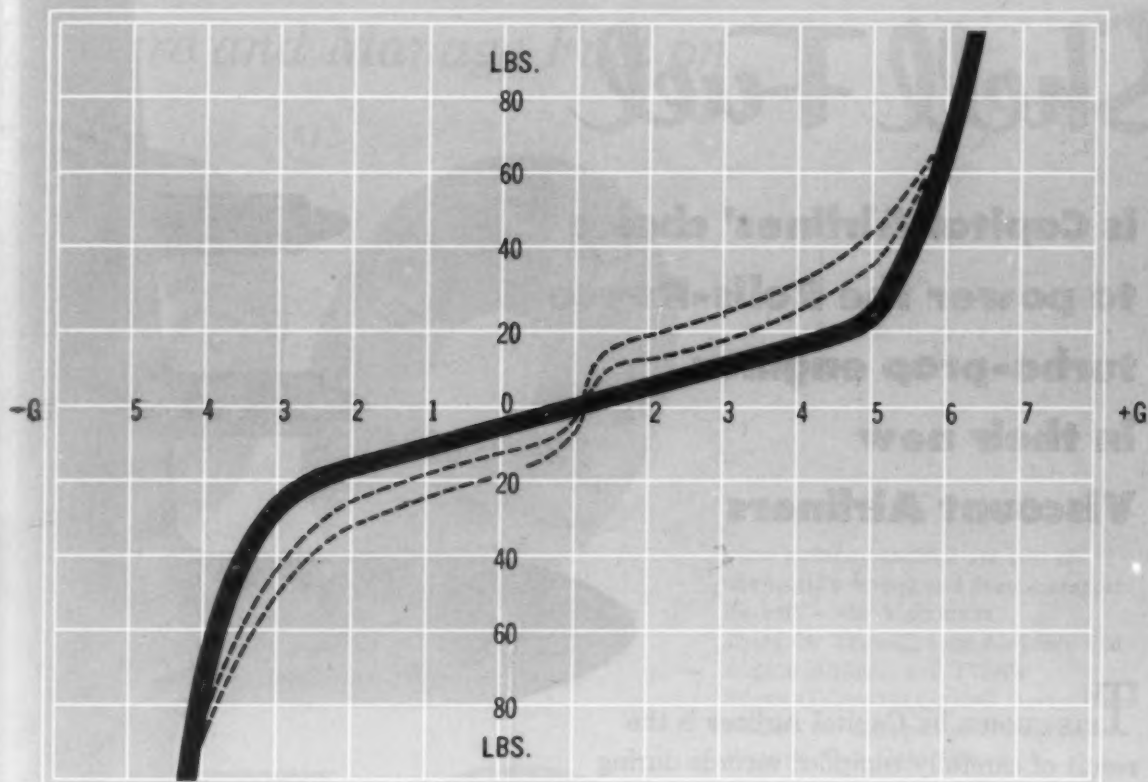
A new business aircraft leasing company has been established in Dallas by Col. D. Harold Byrd, head of the Byrd Oil Corporation; Robert A. Lyle, his chief pilot for nine years; and Charles R. Pate, Jr., a former crew member. The Byrd company has assigned its aircraft to the new firm, known as Executive Flyers, Inc., to operate.

Business companies will lease the aircraft on a per-hour basis through lease agreements for either occasional or regular use, depending on their need. Initially, Executive Flyers has a pool of six aircraft available for lease, including two Lodestars, two Beech Bonanzas, a Twin-Bonanza, and a Navion.

Rental rates range from \$35 an hour for single-engine equipment to \$75 an hour for the Twin-Bonanza and \$150 for the Lodestars. Full crews will be supplied.



EXECUTIVE 240. Pacific Airmotive has designed a special interior for executive use of the Convair 240, as more and more are pressed into service. The above interior was recently completed on the 240 owned by the Imperial Oil Co.



Performance curve of a typical Airborne artificial feel regulating installation, showing stick force required to cancel out increasing gravitational pull.

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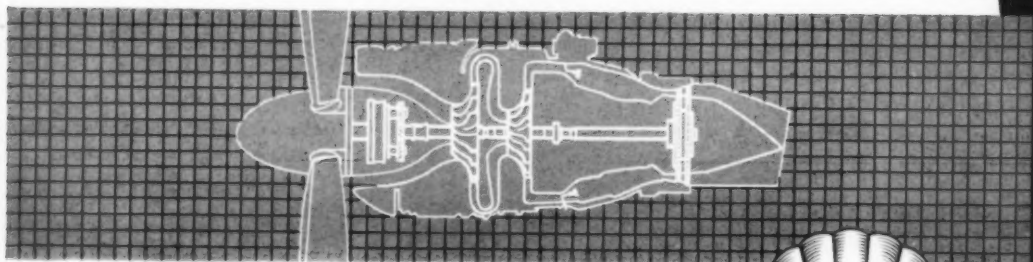
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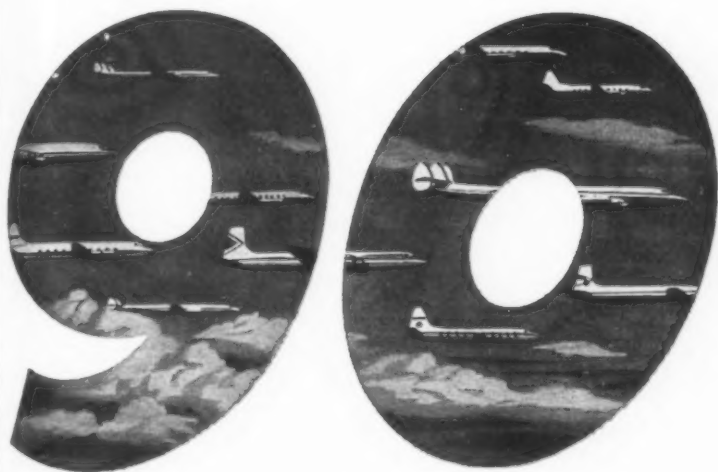
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Circle No. 23 on Reader Service Card.

TRANSPORT TRENDS Washington, D. C., August 1, 1955

IT NOW APPEARS CERTAIN THE REPUBLICANS will not renew CAB member Josh Lee's term which expires December 31, but rather will continue the Administration's practice of filling such Democratic jobs with so-called "Eisenhower Democrats."

Reports that former Texas Congressman Wingate H. Lucas will succeed Lee are inaccurate, although two months ago Lucas was very much in the running. With strong Ft. Worth support, Lucas reportedly ran into the Dallas-Ft. Worth intercity fight and is not now being considered for the CAB post.

Lee, a 12-year CAB veteran and former Oklahoma senator, would like another term on the Board but plans no campaign to get one. Republicans, meanwhile, do have a successor in mind, but refuse to make a "sitting duck" out of him by announcing his name at this early date.

REVOCATION OF NORTH AMERICAN AIRLINES' license, scheduled for September 1, probably will be stayed either by CAB or U.S. Court of Appeals pending Court review of a North American appeal.

CAB CHAIRMAN ROSS RIZLEY'S "speed up" at CAB could result in decisions this month in the Large Irregular Case and the New York-Chicago Route Case. Also certain before the year is out is final decision in the Denver Service Case.

HOPES RUN HIGH AT LOCKHEED AIRCRAFT CORP. that future sales of its Electra and C-130 turboprops will eventually outshine the Constellation series. To date, Connies delivered and on order have meant slightly over \$1.1 billion in business to Lockheed.

Lockheed still plans to produce a jet transport, says president Robert E. Gross, but won't make the move until "the timing is right."


Meanwhile, additional orders for Electras are hinging on Eastern Air Lines' decision on the turboprop. EAL is negotiating for 50 aircraft with option for 50 more later. Other airline orders are awaiting final Lockheed-Eastern contract, as firm delivery positions cannot be quoted until EAL deal is settled.

MUCH-DISCUSSED AIRLINE NO-SHOW PROBLEM is due for further consideration at a special Air Traffic Conference meeting in Chicago August 11. Proposal to be weighed would establish a no-show penalty charge covering both domestic first class and coach flights. At an earlier ATC meeting at Boston in May, airlines were unable to agree on a penalty plan, and named a special committee to draft one.

Here's the committee's proposal: If a passenger cancels or changes his reservation within six hours of scheduled departure, he will be assessed 10% of the fare to the first point of voluntary stopover, with a minimum charge set at \$1. If a passenger no-shows, he will be assessed 20%, with a \$2 minimum. Certain new rules for picking up tickets in advance are also established.

UNITED AIR LINES' technical team spent last week at Seattle evaluating the Boeing 707 jet transport. Same team was at Santa Monica, Calif., a week earlier looking over details of the Douglas DC-8 jet airliner.

INTERNATIONAL AIR TRANSPORT ASSOCIATION is urging airlines to streamline fare and rate structures and procedures as an economy measure. Said John Brancker, IATA traffic director: "Even the smaller economies are not to be sneezed at in an industry handling 60 million passengers a year. Two cents off the cost of handling each passenger means a saving large enough to buy somebody a new aircraft."



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TRANSPORT AVIATION

Lufthansa Agreement: Was It Really A Giveaway?

- German arrangement with Britain reported equally liberal.
- Senate subcommittee to dig deeper into U. S.-German deal.

By WILLIAM V. HENZEY

Germany has either come up with the best air route negotiating team the aviation world has yet seen or the economic and geographic potential of the country is so valuable as to place its negotiators in a perfect bargaining position.

Whatever the reason, the Germans are getting air rights for the future which assures the restoration of the long-dormant Lufthansa Airline to a leading position among the world's air carriers.

Reverberations are still being heard over what many U.S. officials termed a "giveaway" to the Germans in June. A special Senate subcommittee, headed by Sen. George A. Smathers (D-Fla.) has been formed to dig deeper into U. S. negotiating practices with particular emphasis on the German deal.

• **Hardly had the ink been dry** on the paper establishing this subcommittee, however, when word came that the United Kingdom had arrived tentatively at an agreement with Germany which, if it doesn't foreshadow, certainly equals in liberality that between this country and Germany.

If U.S. negotiating ability was suspect after the Germans walked away with numerous route privileges, criticism abated somewhat when the British, known for their bargaining ability, appeared equally liberal in dealing with the Germans.

One U.S. official told AMERICAN AVIATION the British agreement emphasizes the point U.S. negotiators have tried to make, namely, that Germany figures so prominently in the air route map of the future that other nations have to "give" to receive. He said the U.S. got everything from Germany it could "dream of asking for."

• **Actually, he said, most people** are misled by comparing the number and size of cities in Germany that U. S. lines may serve to those U.S. cities to which Germany has been granted access. But of prime importance in the German agreement are the "and beyond" rights which have been acquired for U.S. carriers.



SMATHERS: "... a thoughtless and completely unjustified giveaway on the part of the State Department."

While the furore in this country stemmed largely from the right granted Germany to fly beyond New York to Latin America, U. S. negotiators feel undue significance is attached to that point since Germany, through its new deal with the British, has acquired more direct access to Latin America by an Atlantic route through the Azores.

The U.S.-German agreement was signed in Washington July 7, four weeks after negotiations closed on a stormy note which, among other things, led to hearings before the Senate Commerce Committee. The signing obviously was not with the blessings of the



JUBILANCE OVER NEW AIR AGREEMENT with U.S. is evidenced by Albrecht von Kessel (r.), German charge d'affaires, at July 7 signing ceremony in Washington with Herbert Hoover, Jr., U.S. Under Secretary of State.

Congressional group which answered by announcing creation of the new Smathers subcommittee.

Congress had asked the State Department and CAB to take a new look at the tentative agreement. The pact signed, however, was unchanged from that which inspired Congressional intervention.

• **The agreement provides** that U.S. airlines may fly: (1) to Hamburg and beyond to points in Europe north and east of Germany; (2) to Dusseldorf-Cologne/Bonn, Frankfurt, Stuttgart and Munich and beyond to points in Europe east and southeast of Germany and beyond; and (3) to Frankfurt and beyond to points in Europe south and southeast of Germany and beyond to North Africa, the Near East and beyond.

For Germany's Lufthansa, it provides for service (1) to Boston, New York and Philadelphia and beyond to points in the Caribbean Sea and beyond to South America; (2) to Chicago, and (3) to San Francisco or Los Angeles via a polar route.

U.S. officials, subsequent to announcement of the British-German agreement, pointed out that significantly absent from the U.S.-German agreement is a route for Lufthansa through the U.S. to Mexico City.

• **Under the British agreement,** Lufthansa may fly to Mexico City via the Azores and Bahamas on a route which also permits service to Venezuela and Peru. This is seen as minimizing the desire or practical possibility of Lufthansa becoming a serious competitor for New York-Latin America traffic.

At prestime the British agreement had not been signed but, according to West German transport minister Christian Seehofer, the signing would take place in the immediate future.

Reports indicated that Lufthansa would be permitted to serve London, Manchester, Glasgow and Edinburgh. In addition to Mexico City, the "and beyond" rights include one route to South Africa via Nairobi or Nigeria and another to India via Turkey, Egypt and Pakistan.

Furthermore, the German official

said negotiations are under way with France, Australia, Belgium, Brazil, the Netherlands, Scandinavia and Switzerland.

It is thus apparent that while Luf-

thansa is not yet equipped to compete on a big scale for world air traffic, Germany definitely is holding its own in the competitive paper struggle for future air supremacy. • • •

CAB Again Orders Panagra to Join With PanAm National on Interchange

An ambitious bid by W. R. Grace & Co. to extend Pan American-Grace Airways' routes north to Miami appeared to fail last month as the Civil Aeronautics Board issued another call for Panagra to join with Pan American World Airways and National Airlines in a through service between New York and South America.

The Board's action, weighted with the threat of non-renewal of the trackage agreement which permits Panagra to use Pan Am's Balboa-Miami route, appeared temporarily at least to sidetrack the revived hassle between the "friendliest airline's" warring co-owners.



J. PETER GRACE, JR.

Grace, claiming that only a Panagra-National agreement was necessary to meet terms of CAB orders in the New York-Balboa Case, assailed Pan Am for pushing for a three-party agreement and urged CAB to answer Pan Am's "obstructionist tactics" with a Miami exemption award for Panagra.

Pan Am's half of Panagra's eight-man board of directors did not concur in the Grace position and Pan Am itself successfully argued that CAB wanted an agreement signed by Pan Am, Panagra, and National.

• CAB gave the parties until August 1, to work out a three-party deal and, at presstime, the first meeting towards this end was scheduled in New York.

As an additional wedge, CAB gave necessary approval to the competitive interchange agreement worked out by Eastern Air Lines and Braniff Airways. Although apparently short on equipment at the present time, EAL and

Braniff were aiming at a mid-August starting date.

But while the latest developments indicate a Pan Am-Panagra-National agreement may be worked out, the bitter exchange preceding CAB's latest order was such as to signal a stormy period ahead for Panagra and its co-owners.

• J. Peter Grace, Jr., president of W. R. Grace & Co., personally took part in a letter-writing battle with Pan Am in which, among other things, he complimented the Eisenhower Administration for starting an anti-trust suit against Pan American.

Since the suit actually was against both Pan Am and Grace, PAA officials expressed "amazement" at Grace's stated position on the Government's suit. It was no secret in Washington that Pan Am had been working for dismissal of the suit as to all parties on the grounds that interchanges called for by CAB would eliminate or minimize the monopoly charges which prompted the anti-trust suit in the first place.

After the June-July flareup, however, there were no indications the Justice Department would back down on its suit.

Douglas' Earnings Off For First Half of '55

Douglas Aircraft Co.'s earnings for the first six months of 1955 were \$13,680,622, as compared with \$19,178,939 for the corresponding period of last year. Earnings per share for the period ending May 31 were \$3.71 per share, as compared with \$5.20 per share for the first six months of 1954.

Company's backlog, which includes 228 transports, totaled \$1,920,000,000 as of June 30. Employment at the four Douglas plants presently totals 77,400.

CAB May Award Texas-Florida Route

Civil Aeronautics Board has set up a Texas-Florida route case but may award the route on an interim exemption basis to one of four pending applicants.

CAB noted the case in which numerous carriers seek amendment of

CAB NEWS

CAB Applications

Mackey Airlines asked authority to carry persons, property, and mail on new route between New York-Washington-Nassau.

Delta-C&S Air Lines applied for new route between Miami and Nassau with nonstop rights between Nassau and domestic Route 54 cities.

Louisville and Jefferson County Air Board urged immediate exemptions permitting American, Eastern, and TWA to operate nonstop Louisville-New York service.

Lineas Aereas de Nicaragua applied for foreign permit permitting freight forwarder operations between any point in U.S. and any point in Nicaragua.

Recent CAB Decisions

Western Air Lines' complaint of unfair competitive practice against Aviation Corp. of Seattle for use of word "Westair" on aircraft, dismissed on acceptance of offer of settlement.

Southwest Airways and Bonanza Air Lines denied temporary exemptions to serve Bakersfield and Palmdale/Lancaster.

Slick Airways' joint air/truck tariff, filed with both CAB and Interstate Commerce Commission, permitted to become effective on July 10.

CAB Calendar

Aug. 9—Hearing, South Pacific Certificate Renewal Case. Wash., D. C. Docket 6950.

Aug. 9—Hearing, rate investigation, 3¢ Mail Experiment West Coast. Tentative. Docket 6901.

Aug. 23—Hearing, 3¢ Mail Rate Investigation—West Coast Experiment. Wash., D. C. Docket 6901.

Sept. 12—Hearing, Erie-Detroit Service Case. Wash., D. C. Docket 6927 et al.

Sept. 19—Hearing, Houston-West Coast Interchange Case. Wash., D. C. Docket 6597 et al.

their certificates for trans-Gulf service may be a lengthy proceeding and that it may be in the public interest to award an exemption in the meantime.

Applicants standing a chance for such an exemption are National, Eastern, Delta-C&S or Braniff. To expedite the exemption phase of the proceeding, CAB said it would hold oral argument in the near future and that the applicants could submit additional factual material beforehand.

Any exemption awarded would be valid until 60 days after the permanent route case is decided.

Piedmont Service Extended

In an unopposed bid, Piedmont Aviation was authorized by the Civil Aeronautics Board last month to extend its local service routes to Washington, D. C. New segment extends from Lynchburg and Charlottesville, Va. It is for a temporary period expiring July 15, 1958.

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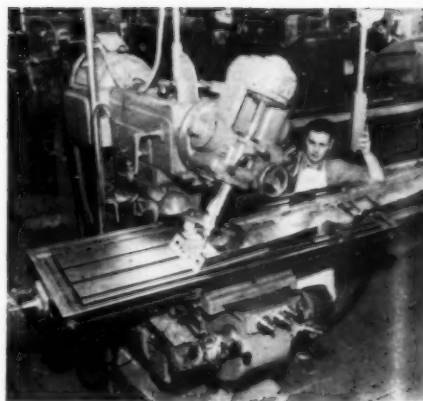
Famed for its combat superiority with the United Nations in the skies over Korea, the Sabre Jet is now being supplied to other NATO countries.

Twin Coach Aircraft Division was selected as a subcontractor for large and intricate machinings for the F-86 as well as for North American Aviation's other high-performance aircraft, the F-100 and FJ4.

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How Capital Will Maintain the Viscount

• New concepts of aircraft inspection and overhaul to be applied

Capital Airlines' operations and maintenance officials are planning new concepts of aircraft inspection and overhaul for its up-coming fleet of 60 new Vickers Viscount turboprop transports.

The Viscount, first brand new aircraft to be introduced by Capital since it bought DC-3s as Pennsylvania Central Airlines, will undergo a continuous airworthiness program unlike any in airline use today. Routine line inspections and periodic partial overhauls are being planned to give CAP a complete and continuous check of the entire airplane at an early date in its operation.

CAA safety agents assigned Capital put their stamp of approval on the plan early last week as first Viscount passenger service began. Approval followed a 100-hour proving run under CAA surveillance, including 50 hours of simulated schedule operation.

Features of Capital's maintenance program, CAA agent-in-charge Thomas F. Walsh told AMERICAN AVIATION, are three:

- **800-hour Engine Time**—Officially approved starting overhaul period for the Rolls-Royce Dart 506 engines is 800 hours. Leading up to fleet-wide use of this figure, CAP will overhaul two engines at 600 hours and a second pair at 700 hours.

- **10,000-hour Overhaul**—Aircraft overhaul cycle will be completed after the 32nd 310-hour inspection (9,920 hours), thus closely approaching a 10,000-hour overhaul.

- **Sampling Checks**—For new equipment on which Capital has had little or no previous experience, a sampling inspection program provides for progressive monitoring of its condition until results point to a suitable overhaul or inspection time.

The 800-hour initial engine period authorized for Capital, CAA says, follows the same pattern used for U. S. carriers introducing American-built engines. Procedures normally call for new-carrier approval of a period somewhat lower than that in use by airlines that have gained experience with the equipment.

In the case of the Viscount, both British European Airways and Air France are now operating Dart engines to 1,050 hours. Trans Canada Airlines introduced the engines into service at 1,000 hours, subject to demonstration of satisfactory service by earlier sampling of six engines at lower times.

Only major engine component Cap-

Viscount Maintenance Periods

Line Inspections

No. 2 Checks 110 Hrs.
Major Check 310 Hrs.

Engine Overhaul

Basic Engine 800 Hrs.
Flame Tubes 750 Hrs.

Note: Two engines to be overhauled at 600 hrs. and two at 700 hrs. to sample condition at lower overhaul time. Two flame tubes to be removed at 400 hrs. for this same purpose.

Aircraft Overhaul

Complete Cycle 9,920 hrs.

Note: Partial overhauls (¼) to be conducted at 2,480, 4,960, 7,440 and 9,920 hours.

checks in that one-fourth of an overhaul will be accomplished each eighth such check.

This concept of progressive overhaul is by no means new to airline maintenance. During the past few years many U. S. carriers have modernized their inspection techniques to follow a general pattern first set down by United Air Lines.

Capital has studied many such plans now in use and, in the Viscount program, feels it has combined all the better features of each it has surveyed.

What is new and different about CAP's progressive overhaul system is the manner in which the partial overhaul checks are applied. It works like this:

In establishing the inspection system, the airplane is divided into a given number of work areas, some involving wing structure and others the aircraft's fuselage, tail or nacelle structure and components.

- **Key inspection items** that constitute an overhaul for each of these areas are spotted throughout the four partial overhaul checks so that when all are completed the airplane is considered overhauled.

Normal practice in the past, when introducing a new fleet of aircraft into operation, has been to systematically schedule each airplane through the first, second, third and fourth checks as it accumulated the required flying time. With this method, items in areas scheduled for the 4th partial overhaul would not get a thorough

ital will replace at lower time intervals than the complete engine will be the flame tubes or combustion chambers. Here the approved time is 750 hours, but combustors on two engines will be changed at 400 hour periods to sample their condition earlier in operation.

Capital will do the complete Dart overhaul job in its own engine shops from the start. Two spare engines have been on hand for several months in advance of schedule operation for familiarization of overhaul shop mechanics.

Aircraft Maintenance

- **Routine line service inspections** to be used in Viscount service are a No. 2 check at 110-hour intervals and a "major" inspection every 310 hours.

Progressive overhaul schedule is directly associated with these "major"



FIRST OF CAPITAL'S VISCOUNTS shown here in flight photo entered schedule airline service last week. Airline plans new maintenance techniques in operating the 4-engine turboprop.

check until the airplane reached the 9,920-hour figure.

To get around this situation and provide this same information at a period as low as 2,480-hours, Capital plans a unique system of rotating the checks. As a result, the first Viscount to hit 2,480 hours will get the first quarter-overhaul, the second airplane the second quarter, etc.

• When the fourth airplane reaches 2,480 hours all four partial checks will have been completed and Capital will have overhauled an entire Viscount. With the large, 60-airplane fleet of Viscounts ordered by CAP, this process will be repeated at intervals as frequent as every eight months. At this rate, the airline will always have an up-to-date picture of how the whole airplane is performing as times on individual airplanes continue to grow.

Last facet of the Viscount program is the overhaul of aircraft and engine accessory components. Here, too, the principle of sampling is widely used to gain early experience with components and assure that the selected overhaul period is a sound one.

For example, Maxaret anti-skid braking systems on the Viscount are completely new to Capital. Although overhaul time is being pegged at the 8th 310-hour check (2,480 hours), the system will be removed for overhaul on one airplane at 620 hours, another at 1,240 hours and a third at 1,860 hours.

• Other major components on this sampling schedule include:

Propellers—Overhaul at 1,600 hrs. Two will be sampled at 930 hrs.

Accessory Gear Box—1,860 hr. overhaul, with sampling of two at 620 hrs. and two at 1,240 hrs.

Water Methanol Pump—Sample at 4th check (1,240 hrs.).

Flap Gear Box—Sample at 8th check (2,480 hrs.).

Fuel Cells—Sample at 20th check (6,200 hrs.).

Monitoring Capital's operation and maintenance of first Viscounts to enter U. S. domestic airline service is a five-man team of CAA safety agents. Under agent-in-charge Walsh are J. H. Mc Eliece (operations), Lloyd Stahl and Omar Beasley (maintenance), and L. V. Dravenstadt (electronics).



TRANS-PACIFIC AIRLINES' president Ruddy F. Tongg (left) is shown receiving a Civil Aeronautics Board five-year certificate renewal from Ross Rizley, CAB chairman. Hawaii House delegate Mrs. Elizabeth Farrington is shown center.

easy to clean.

Interior design was done by Harley Earl, vice president in charge of General Motors' styling staff. The story goes that Earl handled design of EAL's first DC-3's and had been frustrated by the narrow cabin, small windows, low ceilings, noise and vibration. He asked Rickenbacker to give him another crack at doing an interior if he ever got an airplane with enough room in it.

All seating is two abreast—64 seats plus five in the lounge. In the main cabin, 26 of the 42 seats are gold-covered; the other 16 are blue, and the nylon carpeting is also blue. The ceiling features a silver color. In the rear is a semi-circular "sun lounge" with five seats.

Impressing the first-rider are the following features:

• **Excellent cabin soundproofing.** Several hundred pounds of extra soundproofing material were added to the EAL model. The new "anacoustic" windows are triple-paned, the third pane being added on the inside and mounted in rubber. Opposite the propellers, structural frames were doubled and steel "studs" added to combat vibration. Rubber insulation is used on the floor, under the nylon carpeting. EAL says that there are 64 different sound-and-vibration absorbers in walls, floor and ceiling, adding up to half a ton of weight, making this the "quietest airliner in the world."

• **Triangular foam rubber carpet-covered hassocks** are under every seat, replacing the usual built-in footrests.

• **An unusually clear public address system.** Speakers, instead of being in the ceiling, are installed in the walls, one for every two rows of seats.

Materials used in the cabin include:

• **Nylon**—Used for upholstery, carpeting and curtains.

• **Naugahyde**—A vinyl used for areas subject to greatest wear, such as

Eastern Hits New High in Luxury With Its Golden Falcon DC-7B

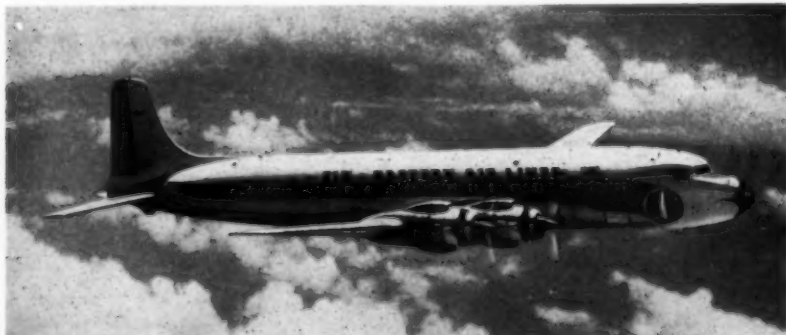
By ERIC BRAMLEY

Capt. Eddie Rickenbacker, Eastern Air Lines' board chairman, once remarked that the company's financial success could be attributed to the fact that not only the pennies of expense but also the mills were counted.

However, there are exceptions to most rules, and it's evident that a rather spectacular exception has been made by EAL in introducing its new Douglas DC-7B Golden Falcon. A trip on the New York-Miami introductory flight convinced this writer that no expense was spared to make the airplane A-1 in passenger comfort and advanced styling.

Although EAL hasn't released figures, the unofficial word is that the Golden Falcon's interior cost \$40,000 more per plane than is usually spent on what one official described as an "average" DC-7. Rickenbacker says flatly that it's the "most luxurious airliner in the world," designed to fill a need for a service for "high-priority business and personal travel."

• **The cabin contains** a number of new materials reportedly never before used in an airplane—mostly plastics or plastic derivatives. The color scheme is out of the ordinary—predominantly gold, plus blue and off shades of white. Although colors are bright, the materials are said to be wear-resistant and



EASTERN AIR LINES' Golden Falcon DC-7B is described by Capt. Eddie Rickenbacker as the "most luxurious airliner in the world."

lower side walls and overhead luggage racks. Naugahyde (trade name used by U.S. Rubber Co.) looks like leather, can be made to hold any color, is light and washable.

• **Mylar**—Developed by DuPont, Mylar has been used in ladies' shoes and purses. It's a transparent resin rolled into thin sheets. After sheets are embossed, they are sandwiched between two layers of acetate buterate. This treatment, used for the first time, was developed by High Vacuum Metals, Clinton, Mass., and is said to make Mylar almost impervious to wear. It is used on handrails of the baggage rack and in other areas.

For the ceiling, a new combination of materials was used. Basic element is Mylar laminated to a sheet of Naugahyde and perforated to permit the underlying silver to show through.

In the lounge, the same process was used to develop a semi-circular "sunburst" effect as background for the five seats, which are foam rubber encased in leather (alternating colors of white and aqua). Seats have a tufted effect, produced by an electrolytic process developed by Lackawanna Leather Co. of New Jersey.

• **Carosel**—Used in the twin bulkheads partitioning the lounge from the aft cabin. It is two sheets of clear plexiglass with strands of gold Lurex thread spread in a scroll pattern between them before lamination. The material is shatterproof.

• **Glaschop**—A plastic made by Pan Laminates Inc., Tallahassee, Fla., Glaschop is used on bulkheads between the main cabin sections. White fibre-glass threads are scattered in a "random" pattern and sealed between two layers of frosted plastic.

• **Enreval**—Used in headrests. It's nylon thread subjected to a Swiss-patented weaving method, known as the Hellenko process, and is said by EAL to be the "strongest known man-made textile material."

REF Manufacturing Co., Mineola, L. I., N. Y., produced the electrically-controlled, stainless-steel galley, capable of heating 74 meals at once. Northern Industrial Chemical Co., Boston, created a new design in white trays, dishes and casseroles, using improved plastics. Tables which are inserted into arm rests to hold food trays are gold. Cost of each galley and its meal service equipment is \$12,000.

All seats on the Golden Falcon will be reserved. Meals will be the "finest aloft," EAL says, and liquor will be sold.

EAL is improving its stewardess service, but, contrary to reports, special girls will not be selected for the DC-7B's.

Radar Gives UAL 340s New Look

United Air Lines weather-mapping radar installation in its Convair 340s extends the nose of the airplane a total of 28 inches and gives it a new, smart streamlined appearance up front.

The "new look" is accentuated by a UAL innovation—painting the entire nose in the traditional UAL blue. It blends into the standard paint job and takes away all appearance of radome construction.

Initial tests indicate the paint has little, if any, effect on the performance of the RCA AVQ-10 radar United is installing in its fleet.

• **The airline, too**, may be in store for some other benefits from the installation. There are rumors that the new nose cap, which "sharpens" the 340's frontal area, will add up to seven mph to its cruising speed.

This cannot be substantiated, however, until recalibration of the airspeed system can be accomplished later this fall.

UAL has completed the first radar installation in the "O'Connor," president W. A. Patterson's executive airplane. Dive tests for CAA recertification of the new configuration were performed with this airplane.

• **Tests were flown** by a Convair flight crew and were required because installation of a pressure-tight bulkhead at Station 9 in the nose, which carries support structure for the radar antenna scanner, is classed as major structural change.

The new contour of the nose also required a redesign of the nose wheel doors.

United expects the weather radar to save a certain number of cancelled flights, but its primary purpose in making the investment is to provide smoother flights for passengers.



CLOSE-UP VIEW OF UAL's new Convair 340 radar installation shows hinged nose section which houses radar antenna.



COCKPIT VIEW OF RADAR-EQUIPPED 340 points up center-panel location of scope for use by both flight crew members.

This is the reason it is making the 340 installations for its short-haul operations first. It expects to have 12 Convairs equipped and flying in service by the end of the year.

Airline plan is to phase in the radar project on DC-6 equipment while still working on the 340s, then to modify its DC-7s last.



RADAR NOSE on 340 extends 28 1/2 inches beyond standard aircraft dimension and may up cruise speed as much as seven mph. Speed-up however, won't be confirmed until airspeed tests this fall.

One of the biggest melees in recent times around Washington National Airport occurred when the airlines experimented with the self-claiming baggage system that has been so successful at Denver and other points, and about which we've written before. We're told that the relatively small baggage room at WNA was in a continual uproar as crowds of people tried to find their bags. Also, only one exit door was used, where baggage tags were being checked, and the jam was terrific. Result was outraged passengers. Which should serve as a lesson to airlines at other airports: don't expect the system to work unless proper facilities are available.

• •

Not many years ago, when you called an airline for a reservation, the agent first had to request the space and then call you back and confirm the seat. Then someone had an idea: why not let the agent confirm seats immediately to passengers until he gets a stop-sale order? Skeptics threw up their hands and said it would never work, that there would be oversales, etc. Nevertheless, it was tried, was successful, and sell-and-record is now used by everyone. Today, there's another situation that, in our opinion, needs equally drastic action. The lines at ticket counters are getting longer; waiting time at check-in is irksome. There's no uniformity in the industry; customers don't know where they're supposed to go and what they're supposed to do to check in. When is somebody going to step forward with a plan possibly as bold as sell-and-record?

• •

Well, now, we have a reader who claims that the smallest scheduled airline stop is not Land O' Lakes, Wis. (population 150) as claimed by North Central Airlines. Warren Hunter, Jr., of Pacific Northern Airlines, says PNA gives year-round scheduled service to Egegik, Alaska (pop. 116) and also Levelock (pop. 76). Furthermore, says Hunter, PNA has the smallest community receiving year-round scheduled four-engined service (DC-4)—Yakutat. Population is 293 and this figure, he observes, probably includes all the malamute hounds. We don't know whether North Central will consider it cricket that we went to a Territory for a smaller stop, but anyway we report it for the record.

Sales, Traffic, Promotion

Looks like Delta-C&S Air Lines has a smash hit in the "ranch hand" breakfasts it serves to DC-7 passengers on flights from Houston to Memphis, St. Louis and Chicago. Menus are printed in attractive "western" style on cards suitable for mailing to friends. One menu includes Texas grapefruit, "ranch-cured ham and red-eye gravy," scrambled eggs, grits, hot biscuits, beverage. Another features Texas melon, ranch hand flapjacks with maple syrup, little pig sausages, beverage. Both meals are topped off with "ready-rolled smokes."

American Airlines has installed a new ticket counter in its Baker Hotel office, Dallas, that is to become the system-wide standard. Designed for increased efficiency, features include a route map under glass at each position, a phone at each position with dial placed at working level and phone suspended below the counter and slots for literature such as tour folders and timetables, which are visible to passengers. Agents have commented favorably on: space for heavy, frequently-used manuals at hand level, two cash drawers at each position, three pull-out shelves for quick reference material at each agent's left hand, large cabinet



"P-6," an odorless hydro-carbon chemical which it is claimed will eliminate tobacco and cooking odors and prevent airsickness and nausea, is to be used aboard all Swissair's aircraft. Developed by Dr. W. L. Phillips, of Phillips Scientific Laboratories, Newark, N.J., P-6 is said to prevent sensitization from tobacco, cooking and other odors by disintegrating these odors as they form. Swissair said it also chemically precipitates vapor pressure inside an aircraft, preventing nausea and flight fatigue. Cigar smoking "will actually be encouraged" because smoke or smell will not disturb other passengers, the airline stated. Photo shows small metal receptacle containing fiberglass treated with P-6 which will be attached below passengers' seats, on alternate rows, and in kitchen, washrooms and crew compartment. They will be replaced after every flight.

at each position for storage and supplies, foam-rubber pull-out seat at each position . . . AA has leased space in the St. Francis Hotel, San Francisco, for a new city ticket office . . .

TWA is offering for sale eight travel guides of Europe, covering Germany, Britain, Spain, Italy, Portugal, Ireland, France and Switzerland. They're 25c each, five for \$1, eight for \$1.50; contain tips on weather, language, prices, sightseeing, etc. . . . Company has been using timetable cover to urge passengers to "Fly TWA to Disneyland," which opened July 18 at Anaheim, near Los Angeles. TWA says it's the "only airline officially operating in Disneyland" (rocket ship flights to the moon) . . .

Faced with a critical shortage of trained hostesses for the summer travel season, TWA is re-hiring for 90 days ex-hostesses who resigned during the past year to be married . . . Triple tail fins on TWA's Super-G Constellations are being decorated with a big, scarlet, Scotchlite "Super-G." It's below the horizontal stabilizer on outboard fins, and above the stabilizer on the center fin . . .

When an airline ups its transcontinental cargo capacity 80%, a sales promotion job, both on its own employees and on the public, is needed to fill the space. Trans-Canada Air Lines says its "Fill the Freighter" campaign which started well in advance of the May 2 opening of Montreal-Vancouver all-freight flights (five days weekly) with converted North Stars has resulted in a good build-up in loads. TCA led off with a "Name the Freighter" contest among employees (winner was "Flying Merchant"), then furnished its salesmen with literature and tips and started bombarding them with weekly "campaign bulletins." Ads of 1,000 lines, 500 lines and smaller appeared in newspapers and magazines, two direct-mail pieces (19,000 each) were distributed, plus displays, posters, etc. Evidently it's paid off . . .

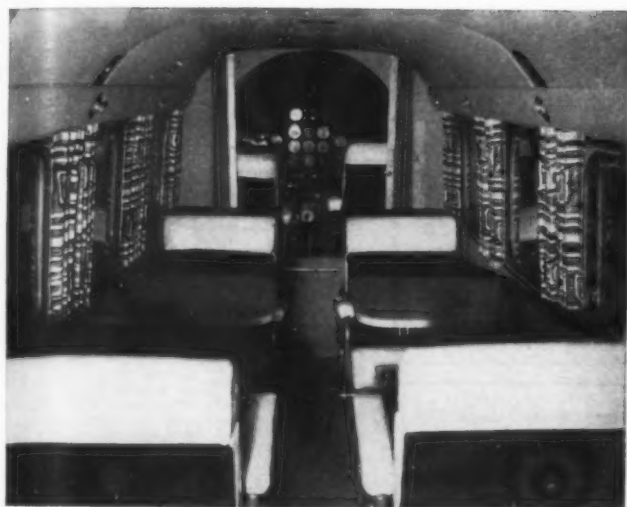
Couture National Car Rental System has signed a five-year contract with Puerto Rican Transportation Authority to operate the exclusive limo service (air-conditioned Cadillacs) from new Isla Verde International Airport to San Juan and other island points. Contract will pay the government \$30,000 over a five-year period. Couture has also bought Baker Auto Rent, of Colorado. H. Earl Smalley, Couture's president, says this makes his outfit the "largest wholly-owned car rental company in the world" with peak operating fleet of 2,000 cars . . .

Western Air Lines has completed a 20-minute color film, "The Romance of Flight," depicting selection, training and experiences of stewardesses . . . Braniff Airways is placing in service 13 new air conditioner trucks . . . TACA International Airlines has moved its New York sales office to 22 W. 48th St. . . .

After-hours service is now available at Air France's office on the Champs-Élysées in Paris. By ringing a button on the door and using a special phone installed at street level, a customer can get information and reservations assistance from an Air France employee at any hour of the night . . .

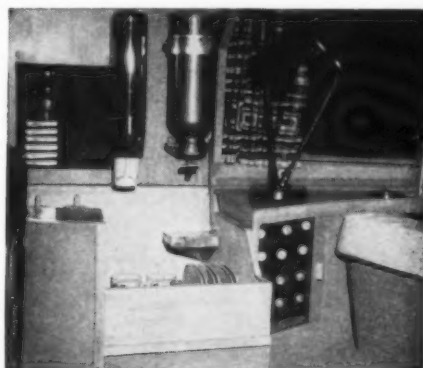
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BLS Aviation Notes

The Bureau of Labor Statistics reported the following aircraft and airline labor negotiations, agreements and adjustments during the first quarter of 1955.

METALWORKING

• Curtiss-Wright Corp. and IAM-AFL negotiated a 5¢ hourly wage increase for 3,200 employees in the Propeller Div., Caldwell, N. J.

• Bendix Aviation Corp. reduced wages 1¢ hourly of 1,300 Electrical Workers-CIO in Red Bank Div., under automatic cost-of-living adjustment.

• Convair-Fort Worth and Office Employees-AFL negotiated 6-8¢ hourly wage increases for 1,200 employees in various labor grades; elimination of escalator clauses; additional company payments for improved group insurance benefits.

• Ryan Aeronautical Co. and UAW-CIO negotiated 6-8¢ hourly wage increases for 2,500 workers; classification adjustments; escalator clauses based on cost-of-living index, though not below 115.4; company payment of \$8.50 (up \$3.50) monthly maximum for improved hospital and surgical insurance, and maximum \$6,500 life insurance.

• Lockheed Aircraft Co. granted 3% wage increases to 2,500 members of independent architects and engineers union in unilateral action following company announcement of intent to terminate contract on March 27; includes minimum and maximum rates, and improved insurance benefits.

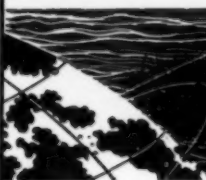
TRANSPORTATION

• Eastern Air Lines and IAM-AFL negotiated hourly wage increases of 5-7¢ for 3,500 workers; fringe benefits, including reduction of progressive schedules in some job classifications; automatic wage progression for mechanics from hiring rate of \$2.01 an hr. to \$2.25 an hr. after two years; longevity increases of 1¢ an hr. each year to maximum 10¢ above job rates, for all employees.

• Capital Airlines and Railway and Steamship Clerks-AFL, covering approximately 2,000 office, loading and stores employees, negotiated increases of \$10 a week for employees at maximum rates and \$7 a week for other employees, as well as additional increases for senior field agents in eight cities; higher shift differentials, ranging from 6-14¢ an hr.

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EN ROUTE...

WAYNE W. PARRISH

Hamburg's Night Life Hotter Than Paris'

Hamburg, Germany, is the unchallenged nightclub center of Europe—for Europeans. Americans and the rich tourists from South America and other parts of the world still pay the outlandish prices to see Paris night life, but for some years Paris has out-priced itself for fun-seeking Europeans.

Less than a mile from the center of Hamburg is a section known as St. Pauli. Part of this area was heavily bombed, so after the war there arose from the flattened ruins an entirely new night club area along a wide avenue called the Reeperbahn. At night its neon lights and flashing signs are a mecca for Scandinavians and the Dutch and the Germans themselves, and lots of British and Americans, and probably some French and Belgians.

There is one cafe or bar or nightclub after another, scores of them, maybe hundreds for all I know. They all have one thing in common; inexpensive entertainment. You can watch a succession of floor shows all evening for a beer. Those that charge admission prices don't charge more than ten or twenty cents, in contrast to Paris.

Visitors Must Be Wary

Of course you can spend a lot if you want to—or if you get trapped by bar girls who get a cut from the management. If you want an expensive bottle of champagne, you can get it, or it may be forced on you if you don't watch out. But the average customer drinks beer and he can have quite an evening on very little money.

Paris has a reputation for tops in nudity, and I won't exactly dispute the fact that bared breasts are a feature of all well-known night spots in the French capital. But Paris is back in the 1890s when it comes to matching Hamburg. I can assure you on the basis of considerable research conducted at great personal sacrifice for you curious readers that Hamburg goes all out and with no holds barred.

My guide was E. O. Hakansson, a likeable, personable friend of mine who is the Hamburg manager for Scandinavian Airlines System. Ernie is a Swede and has married a blonde German who rates the accolade of beautiful. His wife let him out one night so he could take me on a tour of the Reeperbahn.

One club features nude, well, almost nude, Germanic ladies wrestling in mud. These lady wrestlers only do their stuff in mud about twice during a long evening so you've got to be wise to the area to be at this particular nightclub at the right time. The place is called the Jungmühle and is a rectangular sort of layout with the stage at one end and a balcony along two sides. Since the ladies wrestle in a pit underneath the stage platform which is pulled back for the occasion, you can only get a good view from the balcony. If you're too

close on the main floor you're likely to get mud in your eye. Believe me, it's real swishy mud.

It was one of the grizzliest, funniest sights I've ever seen. Two gals, one rather hefty and the other rather slim, both apparently young, come out wearing brief tights which were webbed on the sides. Each had on a white cap over her hair. Otherwise, there ain't any more. So they jump into this goshawful mess and start going through the motions of wrestling. Kinda like TV, and a referee starts calling out "one, two, three..." etc. in German whenever one of the babes is thrown on her back.

Within a minute each is covered with mud and they pick each other up and throw themselves around in the goo at a fast clip. Then they get playful, TV style, and each tries to pull off the other's shorts. One gal pulled the other's shorts back and poured mud into it, so of course the pants began to sag until they were all but off.

Well, anyway, it was fun while it lasted. In time the referee managed to count up to ten and the gals disappeared to take a shower.

Beer-Drinking Animals

Then there's another place called the Hippodrome, downstairs, with a circus ring surrounded by tables and a bar. In the ring are four horses, two camels and one donkey. So you take a table by the ringside and when you order your own beer, if you're polite you'll order an extra large stein of beer for the donkey or for one of the other animals, who then come up to your table and drink the stuff, meantime slobbering all over the place. I might add that the stein they drink out of is extra big, large enough for a horse to get his mug inside.

The customers provide the show. You can ride any of the animals around the ring and of course about 3 a. m. some of the customer's begin falling off to the amusement of the audience. If you can ride the donkey once around the ring—no saddle—you get a bottle of champagne free. I guess nobody's ever done it, because the donkey is as fat as a barrel from drinking beer all evening every night in the week. I have heard of some well-known executives in the aviation business who have disported themselves at the Hippodrome. One fell off a horse late one night. But I won't give him away.

Then let me mention the Tabu nightclub, which is typical of many. It's merely a beer hall with a new performance every hour or so. And it's nothing much except girls, about a dozen of them, who come out in various costumes in what is supposed to be a musical performance, and then the clothes get thinner by a strip-tease progression until they finally come out along the

runway in thin gauze and nothing else. They never heard of G-Strings in Hamburg. And they don't follow the Arabic customs, either. So if you insist on complete nudity, Hamburg can provide it. Nobody believes it until it's proven, but there's so much of it that it got rather boring. As for the gals, well, they were like gals in every nightclub I've ever been in, except they've had more milk to drink in Hamburg than the French gals ever seem to get.

Dating Made Easy

One feature of the larger nightclubs on the Reeperbahn is a complete telephone system. Each booth and table has a dial telephone and a lighted sign over the booth showing its number. So you can dial any booth in the place. The dating works both ways. Due to the shortage of males in Germany, women frequent these night spots and pick up dates by phone. Sometimes it's only for a dance; the woman in Europe has considerable power of choice in these places (Switzerland has quite a few) and just because she wants to look you over doesn't mean that you make the grade automatically. In the U. S. a similar nightclub setup would be patronized by few women except those on the make. In Hamburg women—and this means wives, too—comprise a fairly high percentage of total attendance. Language differences seem to present no major or unsurmountable difficulties.

The Reeperbahn is going every night from about 8:30 p.m. to 5 a.m. There are all-night food spots, the sidewalks are jammed, traffic is heavy, and the bright lights are probably more concentrated in one area than anywhere else in all Europe. It's a popular place in that people of all walks of life go there. Nothing is fancy, nothing expensive, and yet nothing is in the nature of a real dive.

There are beer halls with lots of singing, there are a couple of homosexual joints if you can stand them, and there are several elaborate spots owned and operated by a woman where women are supreme. Men-hungry women, working girls, and whatnot, who can't get husbands in man-short Germany, are the key patrons. Men are welcome. But if a woman asks a man for a dance, the man must accept or get thrown out. It is the woman who chooses and the woman who decides.

What strange places one finds in this cockeyed world. In Hamburg, the second most devastated city in Germany, which has staged a fantastic comeback industrially, you'll find on the Reeperbahn a great mixture of people of all kinds from many countries all seeking diversion or amusement or entertainment or escape. The object is fun, and for the most part I guess everybody finds it in one degree or another.

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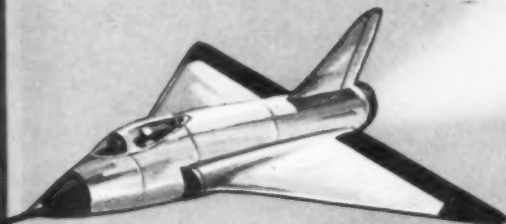
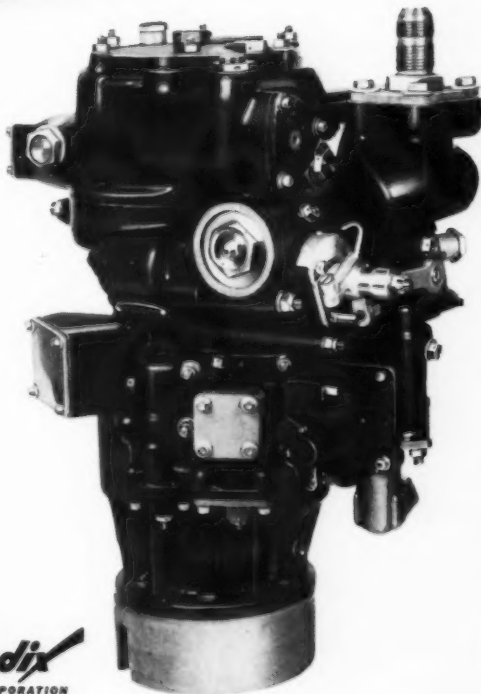
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